

Response Action Contract

Contract No. 68-W-98-228



Coeur d'Alene Lake Fish Investigation Data Report Coeur d'Alene, Idaho

May 2003



**COEUR D'ALENE LAKE FISH INVESTIGATION DATA REPORT
COEUR D'ALENE, IDAHO**

**Prepared by
URS Greiner, Inc.
1501 Fourth Avenue, Suite 1400
Seattle, Washington 98101**

**Prepared for
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101
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ABBREVIATIONS AND ACRONYMS

ATSDR	Agency for Toxic Substances and Disease Registry
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FS	feasibility study
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDHW	Idaho Department of Health and Welfare
IDW	investigation-derived waste
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
mg/kg	milligram per kilogram
MS/MSD	matrix spike/matrix spike duplicate
PCB	polychlorinated biphenyl
PQL	practical quantitation limit
QA	quality assurance
QC	quality control
RAC	Response Action Contract
RPD	relative percent difference
RI	remedial investigation
ROD	Record of Decision
SOP	standard operating procedure
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAM	Work Assignment Manager

1.0 INTRODUCTION

1.1 INTRODUCTION

This report provides the analytical chemistry data results and limited statistical analysis of the fish investigation conducted at Coeur d'Alene Lake (Figure 1-1). Fish were collected from Coeur d'Alene Lake in May and August of 2002 as described in the *Coeur d'Alene Lake Fish Investigation Plan* (USEPA 2002a). The results of the laboratory analysis of the fish samples are provided in this report. The objective of the data collection effort was to collect sufficient fish tissue metal data to permit a determination of human health risks, if any, from consumption of resident Coeur d'Alene Lake fish. This report also contains the field data recorded at the time of fish collection. As planned in the investigation plan, this data report will be provided to the Idaho Department of Health and Welfare (IDHW) and Agency for Toxic Substances and Disease Registry (ATSDR) for evaluation and assessment of the health implications of eating fish caught in the lake.

1.2 PROJECT TEAM

The fish investigation was planned and conducted with participation from numerous parties. The fish investigation plan was prepared by EPA in collaboration with the parties identified below. The sampling plan was reviewed by many interested and involved parties. The sampling plan was approved by the EPA, U.S. Fish and Wildlife Service (USFWS), Coeur d'Alene Tribe, Idaho Department of Fish and Game (IDFG), ATSDR, and IDHW. The approval signatures on the sampling plan indicated that the entities participated in the development of the plan and believed it targeted the appropriate species and locations within Coeur d'Alene Lake to assess human health implications of consuming fish from the lake.

A brief description of the role of each party in the design, implementation, and review of this investigation is given below. Points of contact for each party is provided in Table 1-1.

- EPA: plan development, plan approval, field collection, field oversight, data report preparation
- Coeur d'Alene Tribe: plan development, plan approval, field collection
- IDFG: plan development, plan approval, and field collection
- Idaho Department of Health and Welfare (IDHW): plan development, plan approval, receipt of split samples for chemical analysis of polychlorinated

biphenyls (PCBs), data report review, and preparation of fish consumption advisory, if warranted by the data

- Washington State Department of Ecology (Ecology): plan development and receipt of sample splits for PCB congener analysis
- ATSDR: plan development, plan approval, data report review, and preparation of fish consumption advisory, if warranted by the data
- USFWS: plan development, plan approval, field collection and coordination, and sample processing
- Idaho Department of Environmental Quality (IDEQ): plan development
- Spokane Tribe: plan development
- EPA's Manchester Environmental Laboratory: plan development, and metals, lipid, and moisture content analyses
- Idaho Bureau of Laboratories: receipt of split samples for total PCB analyses
- Patuxent Analytical Control Facility: plan development and fish sample processing

1.3 PROJECT BACKGROUND

Historical mining practices in the Coeur d'Alene basin have resulted in contamination of soil, sediment, surface water, and groundwater. Currently, substantial portions of the Coeur d'Alene basin contain elevated concentrations of contaminants that are hazardous both to humans and to plants and animals (collectively termed ecological receptors). To evaluate and address the effects of mining contamination in the basin, EPA conducted a remedial investigation/feasibility study (URS Greiner and CH2M HILL 2001a, 2001b). EPA issued a Proposed Plan (USEPA 2001b) for cleanup of the basin in October 2001. Following evaluation of public comment, EPA issued a Record of Decision (ROD) in September of 2002 (USEPA 2002b).

The Bunker Hill Mining and Metallurgical Complex Operable Unit 3 (Coeur d'Alene Basin) ROD notes that "questions have been raised regarding the need to further evaluate potential risks to humans who eat whole fish or fillets taken from fish in the lake" (Section 12.3 of USEPA 2002b). Previous evaluations of fish tissue from Coeur d'Alene Lake did not include whole fish.

Only a limited number of fillets were sampled. As a consequence, some uncertainty exists regarding potential risks from eating fish collected in Coeur d'Alene Lake. The ROD also notes that the collaborative fish investigation is being implemented to address the data gap regarding Coeur d'Alene Lake fish.

In support of the ROD, human health (TerraGraphics 2001; CH2M HILL and URS Greiner 2001) and ecological (CH2M HILL and URS Greiner 2001) risk assessments were completed as part of the remedial investigation/feasibility study. The primary metals of concern that were identified include lead and arsenic for human health, and cadmium, lead, and zinc for ecological receptors. The human health risk assessment concluded that there were insufficient data available on contaminant concentrations in fish in Coeur d'Alene Lake to quantify potential risks (TerraGraphics 2001). This issue was discussed in the uncertainty section of the human health risk assessment for Coeur d'Alene Lake fish consumption being summarized as follows:

- Potential exposure to contaminants from consumption of fish taken from Coeur d'Alene Lake has not been quantified. Substantial fish fillet tissue data for three species are available for the lateral lakes; however, these data may not accurately represent risks for persons practicing a subsistence lifestyle in which other tissues, organs, or the whole fish is consumed. Metal concentrations in fillets tend to be lower than metal concentrations in other fish organs or in whole body fish. Use of fillet data may lead to underestimation of risk for a subsistence lifestyle.
- The available fillet data for the lateral lakes does not appear representative in species and potentially size of fish for use in quantifying human health risks from consumption of fish taken from Coeur d'Alene Lake. Therefore, while risks were not found for sport/recreational fishers in the lateral lakes area, their risks from consuming Coeur d'Alene Lake species could not be quantified using the existing data.

In addition to information provided in the human health risk assessment, the Coeur d'Alene Tribe has also identified the lack of data on fish in Coeur d'Alene Lake as a data gap (Coeur d'Alene Tribe 2001). The tribe submitted a preliminary fish sampling plan to EPA, portions of which were incorporated in the Fish Investigation Plan (USEPA 2002a).

Regarding the ecological risk assessment, data on contaminant concentrations in fish tissue from Coeur d'Alene Lake were not available for use in assessing potential risk. Based on the ecological measures and available data from other media, there did not appear to be ecological risks to fish in the lake. While this investigation does not focus on ecological issues, data generated during this investigation may provide additional information on present day ecological conditions in the lake.

1.4 PROJECT OBJECTIVE

The primary objective of this investigation was to address the data gaps identified for the Coeur d'Alene Lake portion of the human health risk assessment (see Section 1.3 of this document and Section 12.3 of the OU 3 ROD [USEPA 2002b]). The study was designed to enable the IDHW and ATSDR to assess the health implications of consumption of fish caught in the lake and to give the agencies a more complete understanding of fish in the lake.

The fish were analyzed for metals to determine if the fish are safe for tribal and recreational consumption. The fish species were collected at approximately the same time of year and in the same areas of the lake known to be used by tribal and recreational fishers. The tissue types analyzed were intended to be representative of two of the major methods by which fish caught in Coeur d'Alene Lake are prepared for consumption by subsistence and sport/recreational fishers. Based on extensive discussions among interested parties, the three fish species collected were bass (mostly largemouth bass, *Micropterus salmoides*), bullhead (mostly brown bullhead, *Ictalurus nebulosus*), and kokanee (*Oncorhynchus nerka*), and the tissue types analyzed were fillets and gutted whole carcasses.

Data generated from this investigation is intended to be used to evaluate human health risks from fish consumption by tribal members (or other persons) practicing a subsistence lifestyle and sport/recreational fishers. These data are also available to evaluate risks to nonfishers who also consume fish from Coeur d'Alene Lake. Evaluation of risks was not conducted in preparation of this report. As described and agreed in the investigation plan, IDHW and ATSDR are planning to evaluate the data and perform the assessment of the need to issue a fish consumption advisory.

Figure 1-1 General Fish Sampling Locations

**Table 1-1
Project Contacts**

Key Role	Name	Telephone Number
U.S. Environmental Protection Agency		
EPA Team Lead	Sheila Eckman	(206) 553-0455
EPA Task Manager	Anne Dailey	(206) 553-2110
EPA Human Health Contact	Marc Stifelman	(206) 553-6979
EPA QA Chemist	Bruce Woods	(206) 553-1193
EPA Regional Sample Control Coordinator	Laura Castrilli	(206) 553-4323
EPA Data Validation Manager	Katie Adams	(360) 871-8748
RAC Contractor for U.S. Environmental Protection Agency		
URS RAC Region 10 Program Manager	Vivianne Knight	(206) 438-2179
URS Site Manager	Steve Hughes	(206) 438-2159
CH2M HILL Investigation-Derived Waste Coordinator	Jim Stefanoff	(509) 623-1664, ext. 202
Stakeholders		
Agency for Toxic Substances and Disease Registry	Richard Kauffman	(206) 553-2632
Coeur d'Alene Tribe	Phillip Cernera	(208) 667-4119
Idaho Department of Fish and Game	Ned Horner	(208) 769-1414
Idaho Department of Health and Welfare	Lijun Jin	(208) 334-5682
Idaho Department of Environmental Quality	Luke Russell	(208) 783-5781
Idaho Bureau of Laboratories	Wally Baker	(208) 334-2235, ext. 233
Spokane Tribe	Fred Kirschner	(509) 924-0184
Washington State Department of Ecology	John Roland	(509) 329-3581
U.S. Fish and Wildlife Service	Dan Audet	(509) 891-0450

Notes:

EPA - U.S. Environmental Protection Agency

QA - quality assurance

RAC - Response Action Contract

2.0 FIELD SAMPLING ACTIVITIES

This section summarizes the field and laboratory activities that were performed to collect the data necessary to support the project objectives.

Collection of fish from Coeur d'Alene Lake was performed in accordance with the *Fish Investigation Plan* prepared in April 2002 (USEPA 2002a). This plan detailed the protocol to be followed during collection of fish from the lake, shore processing of fish, and processing of fish samples at the laboratories.

The three species selected for capture and analysis were the following:

- Kokanee (*Oncorhynchus nerka*)
- Largemouth bass (*Micropterus salmoides*)
- Bullhead (*Ictalurus* sp.)

Based on input from IDFG, ATSDR, and others, kokanee, largemouth bass, and bullheads were selected as the target species for this investigation because of their use by both tribal and sport/recreational fishers. All three species are extensively used by tribal subsistence fishers. A sport/recreational fishery also exists for all three species, although bullheads are not as heavily utilized by sport/recreational fishers as they are by tribal fishers. Notably, the three species are also of ecological importance to the Coeur d'Alene Lake fishery and encompass a variety of feeding habits and exposure patterns to contaminants.

Kokanee are primarily planktivorous, feeding in the water column, whereas largemouth bass are predatory on other fish. Kokanee range throughout the lake, whereas bass are lurking predators with a relatively small home range compared to kokanee. The large home range of kokanee means that they should serve as a good integrator of contaminant concentrations throughout Coeur d'Alene Lake. Largemouth bass, which prey on other fish and have a smaller home range, should be more indicative of contaminant concentrations in localized areas of the lake. Some smallmouth bass were also collected during the field effort. Bullheads are mostly bottom feeders and are normally closely associated with bottom sediments.

A fourth fish species, largescale sucker (*Catostomus macrocheilus*) was collected from the northern end of the lake. Suckers were turned over to the Washington State Department of Ecology (Ecology) for PCB congener analysis. Analytical results for suckers are not presented in this report. The suckers were collected for use in a different monitoring program and were not analyzed or reviewed as part of this investigation.

Sampling locations on the lake are shown in Figure 1-1. The three specific targeted locations for fish capture within Coeur d'Alene Lake for this program are the following:

- Northern end of lake (Mica Bay to Wolf Lodge Bay)
- Central basin (mouth of Coeur d'Alene River north to Driftwood Point)
- Southern basin (all areas in the lake at least one mile south of the mouth of the Coeur d'Alene River)

The three selected sampling locations are all utilized by fishers who consume the fish they capture. They also provide a geographically balanced sampling of the entire lake.

The types of tissue to be obtained for each species were gutted carcasses and fillets. The gutted carcass tissue type consisted of remaining tissue after the removal of the caudal (tail) fin, gills, and guts with the exception of the kidney. The gutted whole fish carcass tissue sample was intended to represent the most commonly used preparation method for fish used in food preparation methods such as smoking, canning, and also in foods such as soups and stews. Fillets are commonly consumed by tribal, sport and recreational fishers.

The numbers of each fish species captured from the three sampling locations in the lake (northern, central, and southern portions) for each desired tissue type are summarized in Table 2-1.

2.1 SAMPLE METHODS

The Coeur d'Alene Tribe, EPA, USFWS, and IDFG were tasked to perform the actual fish capture work for this investigation. For the purposes of this program, the following types of sampling gear were the primary methods used to capture fish from Coeur d'Alene Lake:

- Kokanee: hook and line
- Largemouth bass: boat electroshocking (largescale suckers were retained for Ecology during this effort), gill netting
- Bullhead: boat electroshocking, gill netting

The capture of fish intended to be representative of those caught by humans for consumption took place during the time of year when tribal, sport and recreational fishers can take individuals of a size normally or legally capturable for consumption. The only regulatory guideline on the size of fish that can be kept by fishers is a State of Idaho 12-inch minimum length for largemouth bass, which applies to sport and recreational fishers, but not to tribal fishers. EPA (USEPA 2000) recommends that individual fish in a composite sample vary in length by no more than

10 percent. Kokanee of greater than 8-inch length was the desired size for this investigation. The targeted size range for bass in this study was 8 to 14 inches. Target size for bullhead was 8 to 12 inches.

Only bass and kokanee that were alive when pulled into the boat in the field were included in samples to be submitted for processing and eventual laboratory analysis. Fish were included in the samples submitted for analysis if the individual fish were not obviously diseased or deformed, and did not have observable external lesions or tumors. This determination was made by the field sampling crew.

2.1.1 Sample Collection Permits

IDFG and the Coeur d'Alene Tribe had existing permits for their staff to capture and retain fish for research and scientific purposes. The following three sample collection permits were obtained for the purposes of the fish investigation:

- State of Idaho Scientific Collection Permit Number 1130
- Coeur d'Alene Tribe Fish Collection Permit
- USFWS Permits for Scientific Purposes Under Section 10 of the Endangered Species Act (ESA Incidental Take Permit): Subpermit No. FWSUCR-1, Recovery sub-permit to Take the Bull trout (*Salvelinus confluentus*); Subpermit No. FWSUCR-2, Recovery sub-permit to Take the Bull trout (*Salvelinus confluentus*); Permit No. F-01-02, State of Idaho Department of Fish and Game Scientific Collecting Permit (USFWS 2002).

No state or federally listed special status species were targeted for collection in this program. However, the presence of federally threatened bull trout in Coeur d'Alene Lake presented the possibility that bull trout could be incidentally caught during the sampling program. While a Section 10 permit under the Endangered Species Act was obtained, no bull trout were captured during fish collection for this project (USFWS 2003).

2.1.2 Fish Collection Methods

May 2002 Bass and Bullhead Collection

Electroshocking is an efficient method for capturing a variety of fish species in lakes, as it is relatively nonselective in its ability to stun fish. It is limited in effectiveness to capturing fish shallower than approximately 10 feet in the water column but has been historically proven effective in capturing both bass and bullheads from Coeur d'Alene Lake. Electroshocking was used as the primary capture method for bass, bullhead and largescale sucker (*Catostomus*

macrocheilus) during May 6 through 9, 2002. Collected fish were held in live wells onboard the boat or placed into coolers with ice, under the custody of a USFWS or USEPA field sampling coordinator onboard each electroshocking boat. The field sampling coordinator on each boat was in custody of the fish until they were delivered to shore.

August 2002 Kokanee Collection

The hook and line capture method is employed by many individuals to take kokanee from Coeur d'Alene Lake. Hook and line capture methods used for the kokanee sampling event including using spinners as lures and downriggers to get the spinner down to the proper depth in the water column. The field crew performed the hook and line collections for kokanee on August 12 and 13, 2002.

During the August sampling event, collection of kokanee progressed slower than anticipated. The professional fishing guides contracted to assist with the collection had reported plentiful fishing in the weeks prior to this event. During the 2 days of fishing with 4 fishing crews each day, a total of 63 fish were collected. Of that total, few were caught in the southern end of the lake, possibly due to migration of the fish to cooler water temperatures in the north end of the lake. The target collection for this investigation was 120 individual kokanee from the lake.

Discussions among IDFG, USFWS, CDA Tribe, Ecology, and EPA staff/contractors resulted in the implementation of a contingency to the investigation plan (USEPA 2003). The contingency was to treat the lake as a single sample station for kokanee – in place of the planned three stations (south, center, and north). This contingency was technically justified because kokanee migrate throughout the lake (as oppose to bullheads or bass which do not migrate around the entire lake). To treat the lake as a single sample area, the total kokanee sample quantity requirement was reduced to 21 samples (63 total fish):

- 10 kokanee fillet composite samples (3 fish per composite)
- 11 kokanee gutted carcass composite samples (3 fish per composite)

The reduced kokanee sample collection provides 10 fillet and 11 gutted carcass composites (of 3 fish each) needed by the risk assessors for evaluation but will assess the lake as whole, instead of as three stations. The USFWS, CDA Tribe, Ecology, IDFG and EPA were all in agreement on this contingency approach.

2.1.3 Onshore Sample Handling

The USFWS onshore field coordinator received the fish from the individual boat crews, distributed the fish to other crew members for processing, and ensured that the processed fish

were properly wrapped, labeled, and packed for shipping. Onshore personnel gutted and filleted the fish and packaged the composite samples for shipping. The gutting and filleting followed the guidance provided in the *Fish Investigation Plan* (USEPA 2002a). The onshore coordinator completed all chain of custody forms and ensured that the correct fish for each composite were packaged together. Upon arrival onshore, the largescale suckers and additional bass were handed over to Ecology for processing.

The onshore fish processing crews followed the procedures detailed in the *Fish Investigation Plan* (USEPA 2002a). The general procedures included the following:

- Noted the date and time the samples are received and the location on the lake where they were collected (and boat crew).
- Checked to see that each sample has arrived undamaged.
- Identified the individual fish used to make up a composite sample and placed them together with the appropriate field record form (containing the sample number)
- Recorded all appropriate field measurements on fish, such as length and weight, and note any abnormalities on the field record form
- Prepared the gutted carcasses and fillets; record the fish weight after processing.
- Packaged and labeled the processed fish as necessary, placing three fish per composite sample together.
- Completed the chain of custody, designated field duplicates, and designated laboratory MS/MSD samples.
- Placed the processed, bagged, and labeled fish into shipping coolers containing dry ice with the completed chain of custody.
- Shipped the packaged composite samples to the Patuxent Analytical Control Facility in Laurel, Maryland.

Individual fish were inspected for morphological abnormalities (e.g., tumors, fin erosion, deformities, or lesions), which were noted on the field record form. Obviously diseased or injured fish or fish killed by the sample collection process were not included in the fish submitted for chemical analysis (USEPA 2000).

2.1.4 Decontamination and Investigation-Derived Waste

All reusable field equipment was decontaminated after each use (i.e., cutting boards and fillet knives). Equipment rinse samples were collected each day for metals and PCB analyses to document the decontamination process.

Disposal of investigation-derived waste (IDW) generated during the course of this project was accomplished by EPA. Decontamination IDW water used for the final chemical rinse liquid (i.e., isopropyl alcohol, methanol, and nitric acid) was contained separately and returned to the EPA Manchester Laboratory for disposal. Initial decontamination rinse water, which consisted of non-phosphate detergent and tap water, was contained and discharged to the Spokane Sewage Treatment Plant.

2.1.5 Field Investigation Plan Deviations

The following field deviations occurred during the May and August fish sampling events:

- **Plan:** Collect largemouth bass. **Deviation:** Collected both largemouth and smallmouth bass due to the limited success in collecting only largemouth bass. The collected bass were segregated into similar species and fish size for compositing. **Impact:** No impact on the quality of the data.
- **Plan:** Bullhead were to be collected using gillnets. **Deviation:** Use of gillnets was not successful in collecting bullhead. All bullhead were collected using the electroshock method. **Impact:** No impact on the quality of the data.
- **Plan:** Place bass in live wells on board the boat. **Deviation:** Collected bass were held either in live wells on board the boat or in coolers containing ice. **Impact:** No impact on the quality of the data.
- **Plan:** IDFG was to collect otoliths from kokanee during the August sampling event. **Deviation:** IDFG did not collect otoliths during the August sampling event. **Impact:** No impact on the quality of the data.
- **Plan:** Collect 120 kokanee during the August sampling event for a total of 40 composite samples (30 gutted carcasses and 10 fillets) collected at three different stations (north, central, and south). **Deviation:** Kokanee sampling in August collected 63 individual fish. Collection of kokanee in the southern portion of the lake was limited. Samples collected were limited to 11 gutted carcasses and 10 fillets. See Section 2.1.2 for further detail. **Impact:** The revised contingency plan for

collecting kokanee as a sample from the entire lake resulted in no impact on the quality of the data. The kokanee data will not represent the three designated areas of the lake. The statistical power of the investigation may be reduced. This means that there will be greater uncertainty in the IDHW and ATSDR evaluations of risks from consuming Coeur d'Alene Lake resident kokanee. Refer to detailed discussion in Section 2.1.2.

2.2 LABORATORY PROCEDURES

Composite samples of filleted and gutted fish were shipped on dry ice in coolers from the field to the Patuxent Analytical Control Facility for further processing. All coolers were shipped by FedEx for overnight delivery. Samples were shipped under chain of custody with specific analytical laboratory chains of custody (IDHW, Ecology, and EPA) in the cooler for use after processing at Patuxent. Each cooler was sealed shut with fabric tape.

Fish processing methods used by Patuxent are described in the Patuxent Wildlife Research Center's standard operating procedure (SOP) in Appendix C of the *Fish Investigation Plan* (USEPA 2002a). Patuxent provided processed, homogenized fish samples to the EPA Manchester Laboratory, Idaho Bureau of Laboratories, and Ecology laboratories as described in the plan. Patuxent also prepared the samples to be analyzed as replicate samples and MS/MSD analysis.

After processing of the composite samples by the Patuxent Analytical Control Facility, splits of all fish tissue samples were sent to EPA's Manchester Environmental Laboratory for metals analysis, and to the Idaho Department of Health laboratory for PCB analysis. Split samples of 10 kokanee fillets were submitted to the Ecology laboratory for PCB congener analysis. Ecology did not request any bullhead or bass split samples from Patuxent. Results of the IDHW and Ecology split sample analyses is independent of this metals investigation and are not included in this report. Patuxent also archived a 4-oz jar of tissue for each sample.

2.3 ANALYTICAL METHODS

This section briefly describes the analytical procedures that were used for laboratory measurements. The analytical methods and associated quality assurance/quality control (QA/QC) procedures were selected based on consideration of the project objectives. The analytical methods, calibration procedures, and QC measurements and criteria were based on analytical protocols in the laboratory-specific SOPs, which were included in Appendix E of the *Fish Investigation Plan* (USEPA 2002a). Laboratory QA was implemented and maintained as

described in the plan and according to the laboratory's QA plans and SOPs. An evaluation of the data quality is provided in Section 3.2. The methods included:

- Arsenic (EPA Method 200.8 M; ICPMS 18 Elements-Modified)
- Cadmium (EPA Method 200.8 M; ICPMS 18 Elements-Modified)
- Lead (EPA Method 200.8 M; ICPMS 18 Elements-Modified)
- Mercury (EPA Method 245.6; Mercury, Cold Vapor, Manual, Tissues, MCAWW)
- Zinc (EPA Method 200.8 M; ICPMS 18 Elements-Modified)
- Other metals (EPA Method 200.8 M; ICPMS 18 Elements-Modified): reported with less stringent QC. These data are not summarized in this report, but are provided in Appendix A (as dry weight concentrations).
- Percent lipid (EPA Manchester Laboratory SOP for the Determination of Percent Lipids in Fish Tissue)
- Percent moisture (EPA Manchester Laboratory SOP #C1_C390A)
- Fish tissue digestion procedure (EPA Method 3052-Mod [microwave digestion] and ESAT SOP INOR-006 Rev. 0.0)

Table 2-1
Summary of Fish Sample Collection

Lake Location	Bass		Bullhead		Kokanee ^a		Composite Sample Total
	Gutted Carcass	Fillet	Gutted Carcass	Fillet	Gutted Carcass	Fillet	
Northern	10	0	10	10	NA	NA	30
Central	10	10	10	10	NA	NA	40
Southern	10	0	10	10	NA	NA	30
Sample Total	30	10	30	30	11	10	121

^a Kokanee will represent the entire lake

Notes:

IDHW received splits of all samples after processing at Patuxent.

Ecology received split samples of 10 Kokanee fillets after processing at Patuxent.

Collection of 30 suckers from the northern end of the lake were submitted directly to Ecology for processing.

Collection of 15 additional bass from the northern end of the lake were submitted directly to Ecology for processing.

Patuxent archived one 4-ounce jar of homogenate for each sample.

Ecology - Washington State Department of Ecology

IDHW - Idaho Department of Health and Welfare

NA - not available from individual sections within Coeur d'Alene Lake

3.0 ANALYTICAL RESULTS

3.1 FIELD AND ANALYTICAL RESULTS

The *Fish Investigation Plan* (USEPA 2002a) required that specific information be recorded during field processing of the individual fish (refer to Section 2.1.3). This information is summarized for the three fish species in the following tables.

Table 3-1	Coeur d'Alene Lake Field Data Summary – Bass
Table 3-2	Coeur d'Alene Lake Field Data Summary – Bullhead
Table 3-3	Coeur d'Alene Lake Field Data Summary – Kokanee

The wet weight tissue concentrations of arsenic, cadmium, lead, mercury, and zinc are provided in the following tables. The laboratory data and quality review reports are provided in Appendix A. The analytical results in Appendix A are reported in dry weight concentrations for all metals except mercury. The results presented in the following tables were converted to wet weight concentration using the percent moisture results for each individual sample.

Table 3-4	Coeur d'Alene Lake Analytical Results – Bass
Table 3-5	Coeur d'Alene Lake Analytical Results – Bullhead
Table 3-6	Coeur d'Alene Lake Analytical Results – Kokanee

3.2 QUALITY CONTROL ACTIVITIES

3.2.1 Quality Control Samples

A total of twelve field duplicate samples (split sample from a composite) were collected: 5 bass, 5 bullhead, and 2 kokanee. Due to the limited volume of fish tissue available for the bass and bullhead, the majority of those field duplicates were selected from carcass composites. Only one bass fillet provided sufficient tissue to generate a field duplicate. Kokanee duplicates were collected from one fillet and one carcass composite sample. The fillet duplicates were collected and separately labeled while in the field. All carcass field duplicates were prepared by Patuxent laboratory personnel after homogenization of the composites. Appropriate sample labels for the carcass duplicates were provided to the laboratory by the onshore coordinator.

Rinsate blanks were collected during each day of field sampling. The results for the rinsate blanks are provided in Appendix A.

3.2.2 Laboratory Quality Control Samples

Laboratory QC was accomplished by analyzing initial and continuing calibration standards, method blanks, surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicate samples.

3.2.3 Data validation

Chemical data from the analysis of the composite sediment samples were reviewed by an EPA chemist using procedures identified in the EPA guidance *National Functional Guidelines for Inorganic Data Review* (1994b) as applicable to the analytical methods. Data review and verification of metals, lipids, and percent moisture results included the following:

- Timeliness
- Sample preparation
- Calibration/calibration verification
- Blanks
- Reference control sample/certified reference material
- Duplicate analysis
- MS/MSD analysis
- Serial dilution analysis
- Detection limits
- Overall assessment of the data

3.2.4 Data quality assessment

The following subsections are based on the results of the data review and verification. These subsections provide an evaluation of the chemical data for representativeness, accuracy, analytical precision, comparability, and completeness. Representativeness was evaluated by examining COC documentation and verifying that the requested sample analyses were performed within allowable holding times. Accuracy was evaluated by reviewing instrument performance and the recovery of compounds added to the samples and blanks (surrogates, internal standards, MS, LCS). Precision was evaluated by comparison of results for primary, field duplicate, and laboratory duplicate analyses, and MS/MSDs. Comparability was evaluated by examining the laboratory detection limits. Completeness was determined by calculating the percentage of acceptable data.

Representativeness

COC forms indicated that samples were maintained under proper chain of custody. The forms were signed upon release by the sampling team, upon receipt and release at the Patuxent laboratory, and upon receipt at the EPA Region 10 Laboratory. All samples were preserved properly and analyzed within the holding times. From the field, the fish composite samples were sealed in plastic bags and packed in coolers with dry ice. All samples were held on ice from collection to processing at Patuxent. Samples submitted to Manchester were frozen. The holding time from date of collection for metals (excluding mercury) in frozen biological tissue is two years. Holding time from date of collection for metals and mercury in tissue is 180 days. Holding time from date of collection for percent lipids in frozen tissue is one year. Analysis of tissue samples was completed within the appropriate holding times.

Accuracy

All ICP-MS calibration verification (initial and continuing) met the frequency and recovery acceptance criteria for each required element. Procedural blanks were prepared to assess potential contamination from sample preparation or digestion. None of the elements of interest were detected in the procedural blanks. Reference control samples were digested and analyzed with the samples to verify the efficacy of the laboratory procedures. The results of the reference control samples were within the required control limits. The results of the laboratory duplicate analysis were within the $\pm 20\%$ RPD acceptance criterion. MS/MSD analyses were performed to provide information about the effect of the sample matrix on digestion and measurement methods. All matrix spike recoveries met the specified acceptance limits.

Precision

Twelve field duplicates were collected to verify acceptable field sampling techniques and the representativeness of the sample aliquots. The RPD for all laboratory duplicate samples including MS/MSD pairs, and LCS/LCSD pairs was within the control limits. There are no field duplicate RPD guidelines, all but three field duplicates were within the 20% RPD for laboratory duplicates. Table 3-7 provides a comparison of the field duplicate pairs. The bass fillet lead results for field duplicate sample pair 02194064 and 02194075 presented RPD results of 30%. The bass gutted carcass cadmium results for field duplicate sample pair 02194068 and 02194076 presented RPD results of 40.15%. The bullhead gutted carcass cadmium results for field duplicate sample pair 02194070 and 02194077 presented RPD results of 21.43%. The analytical results for all other field duplicate pairs presented RPD results less than $\pm 20\%$. The average RPD results for all field duplicate pairs presented RPD were between 1.86% and 9.18%, depending on the metal analyzed (Table 3-7).

Lipid duplicate analysis was conducted on eleven samples. All but one set of sample results were reported below the reporting limit ($<0.70\%$). One lipid result [sample 02194005] was reported below the reporting limit while the duplicate was reported above the reporting limit. The results for this sample were qualified as estimated.

Comparability

Comparability is the degree to which the data from one study can be compared to data from other similar studies, reference values (such as background), reference materials, and screening criteria. The EPA Region 10 Laboratories followed the analytical methods delineated in the *Fish Investigation Plan* (USEPA 2002a).

Project detection limit requirements presented in the *Fish Investigation Plan* (USEPA 2002a) were based on the laboratories' technical abilities regarding chemical analysis of tissue. In general, laboratory detection limits for the reported data met the requirements of the plan. No data were qualified due to detections below the method detection limit.

Completeness

Target completeness for this project was 95%. The sampling successfully accomplished 100% completeness for the bass and bullhead results based on the collection of the planned number of composite samples: 40 bass and 60 bullhead.

The number of kokanee samples identified in the Fish Investigation Plan was 40 composite samples. Only 21 kokanee samples were collected during the field event, reflecting 52.5 percent completeness based on the original plan. However, due to the limited success experienced during the kokanee field activities, a contingency plan was established (refer to Section 2.1.2). Based on the contingency plan, kokanee were collected from the entire lake. The contingency plan required collection of 10 kokanee samples for fillets and gutted carcasses. The field effort successfully accomplished the contingency plan goal.

3.2.5 Data Quality Summary

The composite fish tissue sample data are acceptable and meet the project objectives.

Table 3-1
Coeur d'Alene Lake Field Data Summary - Bass

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194000	05/06/02	E-shock	05/06/02	Bass	1	41	N/A	N/A	U	GC	North	
	05/06/02	E-shock	05/06/02	Bass	2	41.5	N/A	N/A	F	GC	North	
	05/06/02	E-shock	05/06/02	Bass	3	39	N/A	N/A	M	GC	North	
02194001	05/06/02	E-shock	05/06/02	Bass	1	37	750.83	534.24	M	GC	North	
	05/06/02	E-shock	05/06/02	Bass	2	37	746.36	619.1	F	GC	North	
	05/06/02	E-shock	05/06/02	Bass	3	35.1	697.32	503.85	M	GC	North	
02194004	05/06/02	E-shock	05/06/02	Bass	1	24.1	191.34	139.37	F	GC	South	
	05/06/02	E-shock	05/06/02	Bass	2	26.5	265.98	199.44	U	GC	South	
	05/06/02	E-shock	05/06/02	Bass	3	24	193.74	143.11	F	GC	South	
02194023	05/06/02	E-shock	05/06/02	Bass	1	41	N/A	N/A	U	GC	North	Dup of 02194000
	05/06/02	E-shock	05/06/02	Bass	2	41.5	N/A	N/A	F	GC	North	
	05/06/02	E-shock	05/06/02	Bass	3	39	N/A	N/A	M	GC	North	
02194024	05/06/02	E-shock	05/07/02	Bass	1	34.1	696.15	588.95	M	GC	North	
	05/06/02	E-shock	05/07/02	Bass	2	38.2	725.05	747.09	M	GC	North	
	05/06/02	E-shock	05/07/02	Bass	3	25.8	604.35	387.3	F	GC	North	
02194025	05/06/02	E-shock	05/07/02	Bass	1	30	442.06	347.38	F	GC	North	smallmouth
	05/06/02	E-shock	05/07/02	Bass	2	30.8	389.5	218.9	F	GC	North	smallmouth
	05/06/02	E-shock	05/07/02	Bass	3	35.4	667.65	469.58	F	GC	North	smallmouth
02194026	05/06/02	E-shock	05/07/02	Bass	1	26.8	379.05	326.9	M	GC	North	smallmouth
	05/06/02	E-shock	05/07/02	Bass	2	25.6	236.84	132.75	F	GC	North	smallmouth
	05/06/02	E-shock	05/07/02	Bass	3	24.6	190.2	176.04	F	GC	North	smallmouth
02194027	05/06/02	E-shock	05/07/02	Bass	1	36	636	461	F	GC	North	
	05/06/02	E-shock	05/07/02	Bass	2	36	480	369	F	GC	North	
	05/06/02	E-shock	05/07/02	Bass	3	33	517	401	F	GC	North	
02194028	05/06/02	E-shock	05/07/02	Bass	1	30	476	396	F	GC	North	
	05/06/02	E-shock	05/07/02	Bass	2	29	436	337	F	GC	North	
	05/06/02	E-shock	05/07/02	Bass	3	29	384	317	F	GC	North	
02194029	05/06/02	E-shock	05/07/02	Bass	1	36.7	750	586.7	F	GC	North	
	05/06/02	E-shock	05/07/02	Bass	2	36.5	832.6	655.7	F	GC	North	
	05/06/02	E-shock	05/07/02	Bass	3	38	879.2	745.3	M	GC	North	
02194030	05/06/02	E-shock	05/07/02	Bass	1	26.1	223.8	181.8	M	GC	North	
	05/06/02	E-shock	05/07/02	Bass	2	24.8	204.3	171.9	M	GC	North	
	05/06/02	E-shock	05/07/02	Bass	3	26	215	173.8	M	GC	North	
02194031	05/06/02	E-shock	05/07/02	Bass	1	29.5	338.3	267.4	M	GC	North	
	05/06/02	E-shock	05/07/02	Bass	2	27.8	315.8	241.6	F	GC	North	
	05/06/02	E-shock	05/07/02	Bass	3	28.6	431.6	274.4	F	GC	North	
02194032	05/06/02	E-shock	05/07/02	Bass	1	36.7	750	586.7	F	GC	North	Dup of 02194029
	05/06/02	E-shock	05/07/02	Bass	2	36.5	832.6	655.7	F	GC	North	
	05/06/02	E-shock	05/07/02	Bass	3	38	879.2	745.3	M	GC	North	
02194034	05/06/02	E-shock	05/07/02	Bass	1	34.1	614.1	517.6	F	GC	South	
	05/06/02	E-shock	05/07/02	Bass	2	34.1	555.8	458.7	F	GC	South	
	05/06/02	E-shock	05/07/02	Bass	3	34.1	647	544	M	GC	South	

Table 3-1 (Continued)
Coeur d'Alene Lake Field Data Summary - Bass

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194035	05/06/02	E-shock	05/07/02	Bass	1	38.3	917.2	725.5	F	GC	South	
	05/06/02	E-shock	05/07/02	Bass	2	33.5	550	456.3	M	GC	South	
	05/06/02	E-shock	05/07/02	Bass	3	31.4	472.9	404.8	M	GC	South	
02194036	05/06/02	E-shock	05/07/02	Bass	1	37	935.6	766.7	F	GC	South	tag# 400626 CdA Tribe
	05/06/02	E-shock	05/07/02	Bass	2	35.8	729.4	619.8	M	GC	South	
	05/06/02	E-shock	05/07/02	Bass	3	28.1	305.3	253.7	F	GC	South	tag# 400050 CdA Tribe
02194049	05/06/02	E-shock	05/08/02	Bass	1	36.9	883.24	663.84	F	GC	Center	Windy Bay
	05/06/02	E-shock	05/08/02	Bass	2	37.4	861.5	684.03	F	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bass	3	31.1	521.08	360.99	F	GC	Center	Windy Bay
02194050	05/07/02	E-shock	05/08/02	Bass	1	38.7	859.4	670.6	M	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bass	2	36.4	750.28	517.47	F	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bass	3	29.3	318.86	237.4	M	GC	Center	Windy Bay
02194060	05/07/02	E-shock	05/08/02	Bass	1	31.5	506.5	429.7	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	2	33.2	439.6	360	F	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	3	31.8	485.3	400.5	F	GC	Center	Harrison Slough
02194061	05/07/02	E-shock	05/08/02	Bass	1	28.4	317.5	268.4	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	2	30.5	464.6	375.5	F	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	3	32.9	558.8	451.9	F	GC	Center	leech on gills; Har. Sl.
02194062	05/07/02	E-shock	05/08/02	Bass	1	28.4	296.6	245.5	F	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	2	31.2	485.6	406.9	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	3	32.8	503.8	414.7	F	GC	Center	Harrison Slough
02194063	05/07/02	E-shock	05/08/02	Bass	1	34.6	603.3	477.2	F	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	2	31.8	418.2	345.3	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	3	30.1	424.7	365.1	M	GC	Center	Harrison Slough
02194064	05/07/02	E-shock	05/08/02	Bass	1	31.8	479	96.5	M	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	2	29.8	401.5	89.49	M	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bass	3	27.1	275.4	87.7	F	FL	Center	Harrison Slough
02194065	05/07/02	E-shock	05/08/02	Bass	1	30.5	367.28	302.47	M	GC	South	
	05/07/02	E-shock	05/08/02	Bass	2	31.5	494.94	362.9	M	GC	South	
	05/07/02	E-shock	05/08/02	Bass	3	29.2	365.32	291.6	F	GC	South	
02194066	05/07/02	E-shock	05/08/02	Bass	1	31.5	506.5	429.7	M	GC	Center	Dup of 02194060
	05/07/02	E-shock	05/08/02	Bass	2	33.2	439.6	360	F	GC	Center	
	05/07/02	E-shock	05/08/02	Bass	3	31.8	485.3	400.5	F	GC	Center	
02194068	05/08/02	E-shock	05/08/02	Bass	1	34	635	531	M	GC	South	
	05/08/02	E-shock	05/08/02	Bass	2	35.5	751	600	M	GC	South	
	05/08/02	E-shock	05/08/02	Bass	3	35	732	600	F	GC	South	
02194069	05/08/02	E-shock	05/08/02	Bass	1	32	516	428.5	M	GC	South	
	05/08/02	E-shock	05/08/02	Bass	2	30	502	413.5	F	GC	South	lower jaw bruised
	05/08/02	E-shock	05/08/02	Bass	3	32	533.3	436.7	F	GC	South	
02194072	05/08/02	E-shock	05/08/02	Bass	1	35.2	673	578.5	M	GC	South	
	05/08/02	E-shock	05/08/02	Bass	2	36.4	766	639.5	F	GC	South	
	05/08/02	E-shock	05/08/02	Bass	3	34.4	644.4	532.5	M	GC	South	

Table 3-1 (Continued)
Coeur d'Alene Lake Field Data Summary - Bass

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194073	05/08/02	E-shock	05/08/02	Bass	1	28.5	372	299.7	F	GC	South	
	05/08/02	E-shock	05/08/02	Bass	2	30.9	473.7	395.7	M	GC	South	
	05/08/02	E-shock	05/08/02	Bass	3	30.2	439	377.3	M	GC	South	
02194074	05/08/02	E-shock	05/08/02	Bass	1	29.9	390.5	330.6	M	GC	South	
	05/08/02	E-shock	05/08/02	Bass	2	29.4	364.9	297.1	M	GC	South	
	05/08/02	E-shock	05/08/02	Bass	3	30.4	415.8	359.4	M	GC	South	
02194075	05/07/02	E-shock	05/08/02	Bass	1	31.8	479	96.5	M	FL	Center	Dup of 02194064
	05/07/02	E-shock	05/08/02	Bass	2	29.8	401.5	89.49	M	FL	Center	
	05/07/02	E-shock	05/08/02	Bass	3	27.1	275.4	87.7	F	FL	Center	
02194076	05/08/02	E-shock	05/08/02	Bass	1	34	635	531	M	GC	South	Dup of 02194068
	05/08/02	E-shock	05/08/02	Bass	2	35.5	751	600	M	GC	South	
	05/08/02	E-shock	05/08/02	Bass	3	35	732	600	F	GC	South	
02194079	05/08/02	E-shock	05/09/02	Bass	1	37.6	979.5	44.6	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	30.2	447.7	42.5	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	26.9	302.9	43.9	U	FL	Center	Harrison Slough
02194080	05/08/02	E-shock	05/09/02	Bass	1	32.6	585.6	48.2	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	36.1	721.6	48.3	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	33.1	623.4	48.7	U	FL	Center	Harrison Slough
02194081	05/08/02	E-shock	05/09/02	Bass	1	36.3	852.1	76.4	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	39.2	924.2	76.9	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	36.7	792.8	76.1	U	FL	Center	Harrison Slough
02194082	05/08/02	E-shock	05/09/02	Bass	1	39.2	737.26	603.65	M	GC	Center	all 3 fish Powderhorn/
	05/08/02	E-shock	05/09/02	Bass	2	32.2	510.28	428.73	M	GC	Center	Rockford/Windy Bays
	05/08/02	E-shock	05/09/02	Bass	3	38.8	1077.42	843.26	F	GC	Center	tag# 501112 CdA Tribe
02194083	05/08/02	E-shock	05/09/02	Bass	1	33.4	530.84	428.05	M	GC	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	32.5	586.33	490.72	M	GC	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	33.2	619.13	463.5	M	GC	Center	Harrison Slough
02194084	05/08/02	E-shock	05/09/02	Bass	1	38.7	967.98	762.29	F	GC	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	34.5	592.07	472.88	F	GC	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	33.7	632.5	520.75	M	GC	Center	Harrison Slough
02194085	05/08/02	E-shock	05/09/02	Bass	1	40	967.96	722.12	F	GC	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	40.3	1054.74	874.24	M	GC	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	40.3	1132.94	863.02	F	GC	Center	Harrison Slough
02194086	05/08/02	E-shock	05/09/02	Bass	1	32.5	527.1	73.7	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	33.5	591.4	73	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	32.4	570.8	74	U	FL	Center	Harrison Slough
02194087	05/08/02	E-shock	05/09/02	Bass	1	38.2	867.2	116.3	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	39.7	1018	116.9	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	41	1188	117.2	U	FL	Center	Harrison Slough
02194088	05/08/02	E-shock	05/09/02	Bass	1	39	862.4	113.7	U	FL	Center	leech on gills; Har. Sl.
	05/08/02	E-shock	05/09/02	Bass	2	36.6	795.7	113.6	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	40.2	1055.9	113.7	U	FL	Center	Harrison Slough

Table 3-1 (Continued)
Coeur d'Alene Lake Field Data Summary - Bass

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194089	05/08/02	E-shock	05/09/02	Bass	1	33	712.2	81	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	33	551.8	80.4	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	34.5	550.7	80.5	U	FL	Center	Harrison Slough
02194090	05/08/02	E-shock	05/09/02	Bass	1	33.3	590	63.8	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	31	423.1	64.3	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	30.3	416.1	63.5	U	FL	Center	Harrison Slough
02194091	05/08/02	E-shock	05/09/02	Bass	1	42	1307.1	159.4	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	2	38.9	1050.9	158.7	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/09/02	Bass	3	41	1071.4	159.7	U	FL	Center	Harrison Slough

Notes:

cm - centimeters

Dup - duplicate

E-shock - electroshock

F - female

FL - fillet

g - grams

GC - gutted carcass

M - male

NA - not available

U - undetermined

Table 3-2
Coeur d'Alene Lake Field Data Summary - Bullhead

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194002	05/06/02	E-shock	05/06/02	Bullhead	1	23	165	31.4	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	23.4	139	31.3	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22	107	31.4	U	FL	North	
02194003	05/06/02	E-shock	05/06/02	Bullhead	1	23	182	35	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	25	211	35	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	24	180	35	U	FL	North	
02194005	05/06/02	E-shock	05/06/02	Bullhead	1	23.7	170.5	143.1	F	GC	North	reweigh all 3 fish
	05/06/02	E-shock	05/06/02	Bullhead	2	22.8	141.4	102.1	U	GC	North	(see field record)
	05/06/02	E-shock	05/06/02	Bullhead	3	22	150.5	124.2	U	GC	North	
02194006	05/06/02	E-shock	05/06/02	Bullhead	1	21.6	135	114.4	U	GC	North	reweigh all 3 fish
	05/06/02	E-shock	05/06/02	Bullhead	2	23	143.4	119.8	U	GC	North	(see field record)
	05/06/02	E-shock	05/06/02	Bullhead	3	22.2	121.7	100.2	U	GC	North	
02194007	05/06/02	E-shock	05/06/02	Bullhead	1	22.7	158	38.5	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	22.9	153	38	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	23	176	38.2	U	FL	North	
02194008	05/06/02	E-shock	05/06/02	Bullhead	1	23	172	38.6	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	22	174	39	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22	162	39	U	FL	North	
02194009	05/06/02	E-shock	05/06/02	Bullhead	1	22.5	151	29	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	22.9	168	29.5	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22.7	169	30.4	U	FL	North	
02194010	05/06/02	E-shock	05/06/02	Bullhead	1	22	138	29	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	22	135	30	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22	139	30	U	FL	North	
02194011	05/06/02	E-shock	05/06/02	Bullhead	1	22.7	131.5	110.8	U	GC	North	reweigh all 3 fish
	05/06/02	E-shock	05/06/02	Bullhead	2	22.5	145.4	116.3	F	GC	North	(see field record)
	05/06/02	E-shock	05/06/02	Bullhead	3	22.7	135.5	107.2	F	GC	North	
02194012	05/06/02	E-shock	05/06/02	Bullhead	1	20.5	103.4	87.5	M	GC	North	reweigh all 3 fish
	05/06/02	E-shock	05/06/02	Bullhead	2	20.6	110.9	89.6	M	GC	North	(see field record)
	05/06/02	E-shock	05/06/02	Bullhead	3	20.8	118.1	100.5	M	GC	North	
02194013	05/06/02	E-shock	05/06/02	Bullhead	1	20.7	94.9	83.7	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	20.5	105.4	88.1	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	20.8	109	96.5	M	GC	North	
02194014	05/06/02	E-shock	05/06/02	Bullhead	1	21.2	116.13	95	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	22	130.78	106.23	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	20.7	113.57	93.74	M	GC	North	
02194015	05/06/02	E-shock	05/06/02	Bullhead	1	24	172.04	129.85	M	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	24.3	179.95	145.29	M	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	23.1	160.78	119.37	F	GC	North	
02194016	05/06/02	E-shock	05/06/02	Bullhead	1	22	153.43	118.7	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	22.3	150.79	119.81	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22.6	145.69	118.95	F	GC	North	

Table 3-2 (Continued)
Coeur d'Alene Lake Field Data Summary - Bullhead

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194017	05/06/02	E-shock	05/06/02	Bullhead	1	22	153	32.9	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	23.2	153	33.2	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22.2	164	32.9	U	FL	North	
02194018	05/06/02	E-shock	05/06/02	Bullhead	1	23	160	33	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	21	151	32.6	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	23	160	32.8	U	FL	North	
02194019	05/06/02	E-shock	05/06/02	Bullhead	1	23.1	168	36.6	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	24.2	205	36.9	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	23.8	179	37.1	U	FL	North	
02194020	05/06/02	E-shock	05/06/02	Bullhead	1	23	169.3	143.6	M	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	23.1	146.4	124.1	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22.9	157.2	133.5	F	GC	North	
02194021	05/06/02	E-shock	05/06/02	Bullhead	1	22.7	145.3	114.8	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	22	131.3	110	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22.4	137.5	121.6	M	GC	North	
02194022	05/06/02	E-shock	05/06/02	Bullhead	1	23.5	155	32.3	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	2	22.8	159	32	U	FL	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22	145	31.9	U	FL	North	
02194033	05/06/02	E-shock	05/07/02	Bullhead	1	20.9	128.8	78.38	F	GC	Center	Dup of 02194039
	05/06/02	E-shock	05/07/02	Bullhead	2	22.1	154.7	92.34	F	GC	Center	
	05/06/02	E-shock	05/07/02	Bullhead	3	23.6	165.4	137.81	F	GC	Center	
02194037	05/06/02	E-shock	05/07/02	Bullhead	1	22	149	28.5	U	FL	Center	
	05/06/02	E-shock	05/07/02	Bullhead	2	24	218	29.2	U	FL	Center	
	05/06/02	E-shock	05/07/02	Bullhead	3	22	155	28.1	U	FL	Center	
02194038	05/06/02	E-shock	05/07/02	Bullhead	1	22	154	32.2	U	FL	Center	
	05/06/02	E-shock	05/07/02	Bullhead	2	22.7	169	32.2	U	FL	Center	
	05/06/02	E-shock	05/07/02	Bullhead	3	23.5	178.6	32.9	U	FL	Center	
02194039	05/06/02	E-shock	05/07/02	Bullhead	1	20.9	128.8	78.38	F	GC	Center	
	05/06/02	E-shock	05/07/02	Bullhead	2	22.1	154.7	92.34	F	GC	Center	
	05/06/02	E-shock	05/07/02	Bullhead	3	23.6	165.4	137.81	F	GC	Center	
02194040	05/06/02	E-shock	05/06/02	Bullhead	1	23	169.3	143.6	M	GC	North	Dup of 02194020
	05/06/02	E-shock	05/06/02	Bullhead	2	23.1	146.4	124.1	F	GC	North	
	05/06/02	E-shock	05/06/02	Bullhead	3	22.9	157.2	133.5	F	GC	North	
02194041	05/07/02	E-shock	05/08/02	Bullhead	1	26	259	44.4	U	FL	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	2	25	264	44.8	U	FL	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	3	25	256	44.4	U	FL	Center	Windy Bay
02194042	05/07/02	E-shock	05/08/02	Bullhead	1	25	236.5	42.6	U	FL	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	2	25	234.1	42.4	U	FL	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	3	24	215.8	41.9	U	FL	Center	Windy Bay
02194043	05/07/02	E-shock	05/08/02	Bullhead	1	23	204.5	39.9	U	FL	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	2	24	192.9	40.8	U	FL	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	3	23	184.5	40.6	U	FL	Center	Windy Bay

Table 3-2 (Continued)
Coeur d'Alene Lake Field Data Summary - Bullhead

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194044	05/07/02	E-shock	05/08/02	Bullhead	1	24	200	37.7	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	2	25	200.5	36.4	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	23	162.7	37	U	FL	Center	Harrison Slough
02194045	05/07/02	E-shock	05/08/02	Bullhead	1	22	158	22	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	2	20	134	22	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	23	163	22.6	U	FL	Center	Harrison Slough
02194046	05/07/02	E-shock	05/08/02	Bullhead	1	21	128	25.2	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	2	22	162.7	26.1	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	24	165.5	26.3	U	FL	Center	Harrison Slough
02194047	05/07/02	E-shock	05/08/02	Bullhead	1	21	124	18.9	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	2	20	105	19.8	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	19.5	96	18.8	U	FL	Center	Harrison Slough
02194048	05/08/02	E-shock	05/08/02	Bullhead	1	23	176.8	22.3	U	FL	Center	Harrison Slough
	05/08/02	E-shock	05/08/02	Bullhead	2	24	191.4	21.8	U	FL	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	20	117.3	22	U	FL	Center	Harrison Slough
02194051	05/07/02	E-shock	05/08/02	Bullhead	1	23.2	163.02	105.33	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	2	23	155.05	131.75	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	22.4	136.5	99.05	M	GC	Center	Harrison Slough
02194052	05/07/02	E-shock	05/08/02	Bullhead	1	21.8	134.8	106.15	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	2	21.6	135.36	106.36	F	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	19.5	92.79	78.35	M	GC	Center	Harrison Slough
02194053	05/07/02	E-shock	05/08/02	Bullhead	1	24.7	188.99	134.85	F	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	2	23.3	153.47	127.68	F	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	22	158.38	113.88	F	GC	Center	Harrison Slough
02194054	05/07/02	E-shock	05/08/02	Bullhead	1	19.9	100.05	79.96	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	2	18.9	78.06	63.95	F	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	19.3	89.43	73.89	F	GC	Center	Harrison Slough
02194055	05/07/02	E-shock	05/08/02	Bullhead	1	23.2	176.4	145.7	M	GC	Center	3mmlesiononleftvent.side
	05/07/02	E-shock	05/08/02	Bullhead	2	22	127.8	108.7	M	GC	Center	all 3 fish Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	3	21.3	127.8	105.6	F	GC	Center	
02194056	05/07/02	E-shock	05/08/02	Bullhead	1	22	140.4	114.1	M	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	2	23.4	184.6	147.5	F	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	3	21	117.5	95.6	F	GC	Center	Windy Bay
02194057	05/07/02	E-shock	05/08/02	Bullhead	1	21.8	141.9	116.9	M	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	2	22.1	140.6	113.4	M	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	3	22.2	152.2	126	F	GC	Center	Windy Bay
02194058	05/07/02	E-shock	05/08/02	Bullhead	1	23.3	194.4	162.3	M	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	2	23.7	202	167.9	F	GC	Center	Windy Bay
	05/07/02	E-shock	05/08/02	Bullhead	3	23.6	195.6	156.5	M	GC	Center	Windy Bay
02194059	05/07/02	E-shock	05/08/02	Bullhead	1	22.4	134.2	118.1	M	GC	Center	parasites in guts
	05/07/02	E-shock	05/08/02	Bullhead	2	22.3	126.6	107	M	GC	Center	Harrison Slough
	05/07/02	E-shock	05/08/02	Bullhead	3	21.6	126.8	105.2	M	GC	Center	Harrison Slough

Table 3-2 (Continued)
Coeur d'Alene Lake Field Data Summary - Bullhead

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194067	05/07/02	E-shock	05/08/02	Bullhead	1	23.2	163.02	105.33	M	GC	Center	Dup of 02194051
	05/07/02	E-shock	05/08/02	Bullhead	2	23	155.05	131.75	M	GC	Center	
	05/07/02	E-shock	05/08/02	Bullhead	3	22.4	136.5	99.05	M	GC	Center	
02194070	05/08/02	E-shock	05/08/02	Bullhead	1	21.1	124.89	100.33	F	GC	South	
	05/08/02	E-shock	05/08/02	Bullhead	2	21.4	123.02	97.96	F	GC	South	
	05/08/02	E-shock	05/08/02	Bullhead	3	21.8	123.95	96.47	M	GC	South	
02194071	05/08/02	E-shock	05/08/02	Bullhead	1	21.6	133.67	112.05	M	GC	South	
	05/08/02	E-shock	05/08/02	Bullhead	2	21.5	144.58	119.19	M	GC	South	
	05/08/02	E-shock	05/08/02	Bullhead	3	22.2	145.33	117.55	F	GC	South	
02194077	05/08/02	E-shock	05/08/02	Bullhead	1	21.1	124.89	100.33	F	GC	South	Dup of 02194070
	05/08/02	E-shock	05/08/02	Bullhead	2	21.4	123.02	97.96	F	GC	South	
	05/08/02	E-shock	05/08/02	Bullhead	3	21.8	123.95	96.47	M	GC	South	
02194078	05/08/02	E-shock	05/08/02	Bullhead	1	21.6	133.67	112.05	M	GC	South	Dup of 02194071
	05/08/02	E-shock	05/08/02	Bullhead	2	21.5	144.58	119.19	M	GC	South	
	05/08/02	E-shock	05/08/02	Bullhead	3	22.2	145.33	117.55	F	GC	South	
02194092	05/06/02	E-shock	05/09/02	Bullhead	1	23.2	164.68	123.09	F	GC	South	Coll. 5/0602
	05/08/02	E-shock	05/09/02	Bullhead	2	21.3	118.3	100.91	M	GC	South	Coll. 5/08/02
	05/08/02	E-shock	05/09/02	Bullhead	3	21	129.57	108.57	F	GC	South	Coll. 5/08/02
02194093	05/08/02	E-shock	05/09/02	Bullhead	1	24	208.85	163.4	M	GC	South	
	05/08/02	E-shock	05/09/02	Bullhead	2	20.9	124.93	107.29	M	GC	South	
	05/08/02	E-shock	05/09/02	Bullhead	3	22.4	140.36	116.57	M	GC	South	
02194094	05/08/02	E-shock	05/09/02	Bullhead	1	18.5	76.98	62.12	M	GC	South	
	05/08/02	E-shock	05/09/02	Bullhead	2	21.3	118.15	102.13	M	GC	South	
	05/08/02	E-shock	05/09/02	Bullhead	3	19.6	87.27	72.45	M	GC	South	
02194095	05/08/02	E-shock	05/09/02	Bullhead	1	19.8	84.78	71.22	F	GC	South	
	05/08/02	E-shock	05/09/02	Bullhead	2	17.7	68.58	55.29	F	GC	South	
	05/08/02	E-shock	05/09/02	Bullhead	3	17.3	67.48	54.42	M	GC	South	
02194096	05/09/02	E-shock	05/09/02	Bullhead	1	22.6	160.9	125.6	F	GC	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	22.4	154.48	127.56	M	GC	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	22	125.78	104.88	M	GC	South	
02194097	05/09/02	E-shock	05/09/02	Bullhead	1	21.7	125.45	102.03	F	GC	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	22.7	138.32	117.02	M	GC	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	20.8	125.16	102.15	F	GC	South	
02194098	05/09/02	E-shock	05/09/02	Bullhead	1	23.7	163.75	137.77	M	GC	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	23.4	162.2	137.41	M	GC	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	21.2	128.53	107.8	M	GC	South	
02194099	05/09/02	E-shock	05/09/02	Bullhead	1	20.5	100.67	82.1	M	GC	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	20	103.65	85.37	F	GC	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	19.4	95.04	78.71	M	GC	South	
02194100	05/09/02	E-shock	05/09/02	Bullhead	1	21.6	145.4	28.4	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	21.8	145	28.2	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	23	134.8	27.8	U	FL	South	

Table 3-2 (Continued)
Coeur d'Alene Lake Field Data Summary - Bullhead

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02194101	05/09/02	E-shock	05/09/02	Bullhead	1	21.8	141.7	30.3	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	23	185.2	30.1	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	23.2	176.7	30.35	U	FL	South	
02194102	05/09/02	E-shock	05/09/02	Bullhead	1	23.1	165.6	27.43	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	23.3	177	28	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	24.3	194.6	28.3	U	FL	South	
02194103	05/09/02	E-shock	05/09/02	Bullhead	1	22.5	165.41	30.8	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	23	157.86	30.4	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	21.7	140.4	30.3	U	FL	South	
02194104	05/09/02	E-shock	05/09/02	Bullhead	1	21.7	133.3	20.6	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	22.3	133.7	20.7	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	21.2	129.1	21.6	U	FL	South	
02194105	05/09/02	E-shock	05/09/02	Bullhead	1	21	130.64	25.8	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	23.3	149.91	25.7	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	21.3	123.2	25.5	U	FL	South	
02194106	05/09/02	E-shock	05/09/02	Bullhead	1	23	163.1	30.16	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	22.6	161.9	30.5	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	22.3	145.7	29.7	U	FL	South	
02194107	05/09/02	E-shock	05/09/02	Bullhead	1	22.5	142.1	27.6	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	23.7	168	28.1	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	23	150.5	27.8	U	FL	South	
02194108	05/09/02	E-shock	05/09/02	Bullhead	1	20.7	123.7	23.9	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	22	122.6	24.25	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	22.2	149.3	24.7	U	FL	South	
02194109	05/09/02	E-shock	05/09/02	Bullhead	1	21.2	129.1	24.2	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	2	21.7	127.74	24	U	FL	South	
	05/09/02	E-shock	05/09/02	Bullhead	3	22.6	159.72	24.67	U	FL	South	

Notes:

cm - centimeters

Dup - duplicate

E-shock - electroshock

F - female

FL - fillet

g - grams

GC - gutted carcass

M - male

U - undetermined

Table 3-3
Coeur d'Alene Lake Field Data Summary - Kokanee

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02334000	08/12/02	Hook/Line	08/12/02	Kokanee	1	26.8	219	192.5	M	GC	South	southern-most fish
	08/12/02	Hook/Line	08/12/02	Kokanee	2	24.6	185	164.1	F	GC	South	
	08/12/02	Hook/Line	08/12/02	Kokanee	3	22.2	111.8	98.3	U	GC	South	
02334001	08/12/02	Hook/Line	08/12/02	Kokanee	1	27	217.1	195.3	M	GC	South	southern-most fish
	08/12/02	Hook/Line	08/12/02	Kokanee	2	22	112.2	96.1	M	GC	South	
	08/12/02	Hook/Line	08/12/02	Kokanee	3	28.5	286.8	256.9	M	GC	South	
02334002	08/12/02	Hook/Line	08/12/02	Kokanee	1	27.4	226.1	199.9	M	GC	North	
	08/12/02	Hook/Line	08/12/02	Kokanee	2	28.3	212.9	192.3	M	GC	North	
	08/12/02	Hook/Line	08/12/02	Kokanee	3	28.5	234.2	211	M	GC	North	
02334003	08/12/02	Hook/Line	08/12/02	Kokanee	1	25.1	151.5	132.5	M	GC	North	
	08/12/02	Hook/Line	08/12/02	Kokanee	2	25	156.5	137.9	M	GC	North	
	08/12/02	Hook/Line	08/12/02	Kokanee	3	26.5	199.7	172.5	F	GC	North	
02334004	08/12/02	Hook/Line	08/12/02	Kokanee	1	21.2	101	89.4	M	GC	North	
	08/12/02	Hook/Line	08/12/02	Kokanee	2	26.2	193.5	168.5	M	GC	North	
	08/12/02	Hook/Line	08/12/02	Kokanee	3	24.6	146	127.9	F	GC	North	
02334005	08/12/02	Hook/Line	08/12/02	Kokanee	1	22	120.2	28.1	F	FL	Center	
	08/12/02	Hook/Line	08/12/02	Kokanee	2	20.5	87.6	28.8	M	FL	Center	
	08/12/02	Hook/Line	08/12/02	Kokanee	3	23	117.4	28.6	M	FL	Center	
02334006	08/12/02	Hook/Line	08/12/02	Kokanee	1	213	88.6	27.3	M	FL	Center	
	08/12/02	Hook/Line	08/12/02	Kokanee	2	195	70.2	27.1	F	FL	Center	
	08/12/02	Hook/Line	08/12/02	Kokanee	3	197	85.8	27.2	M	FL	Center	
02334007	08/12/02	Hook/Line	08/12/02	Kokanee	1	279	214.4	46.9	F	FL	Center	
	08/12/02	Hook/Line	08/12/02	Kokanee	2	293	224.8	45.3	F	FL	Center	
	08/12/02	Hook/Line	08/12/02	Kokanee	3	313	266.3	46.2	M	FL	Center	
02334008	8/12-13/02	Hook/Line	08/12/02	Kokanee	1	25.5	181	162.2	F	GC	North	Coll. 08/12/02
	8/12-13/02	Hook/Line	08/12/02	Kokanee	2	30.5	267	242.1	M	GC	North	Coll. 08/12/02
	8/12-13/02	Hook/Line	08/13/02	Kokanee	3	31	272.2	233.6	F	GC	North	Coll. 8/13/02
02334009	08/13/02	Hook/Line	08/13/02	Kokanee	1	27	206.1	51	F	FL	Center	
	08/13/02	Hook/Line	08/13/02	Kokanee	2	28	198.3	50.6	M	FL	Center	
	08/13/02	Hook/Line	08/13/02	Kokanee	3	28	214.8	51.1	M	FL	Center	
02334010	08/13/02	Hook/Line	08/13/02	Kokanee	1	27	234	49	F	FL	Center	
	08/13/02	Hook/Line	08/13/02	Kokanee	2	28	218	49.2	F	FL	Center	
	08/13/02	Hook/Line	08/13/02	Kokanee	3	27	213.5	48.8	M	FL	Center	
02334011	08/13/02	Hook/Line	08/13/02	Kokanee	1	25	146.3	125.9	F	GC	North	
	08/13/02	Hook/Line	08/13/02	Kokanee	2	27.4	194.6	171.1	M	GC	North	
	08/13/02	Hook/Line	08/13/02	Kokanee	3	27.5	184.5	167.6	M	GC	North	
02334012	08/13/02	Hook/Line	08/13/02	Kokanee	1	26.5	182.2	160.2	M	GC	North	
	08/13/02	Hook/Line	08/13/02	Kokanee	2	25.5	150.1	137.7	M	GC	North	
	08/13/02	Hook/Line	08/13/02	Kokanee	3	23.4	149	130	F	GC	North	
02334013	08/13/02	Hook/Line	08/13/02	Kokanee	1	24.3	137.1	122.1	M	GC	North	2 fish from north
	08/13/02	Hook/Line	08/13/02	Kokanee	2	19.7	82.8	71.5	M	GC	North	composited with 1 fish
	08/13/02	Hook/Line	08/13/02	Kokanee	3	24	146.5	129.4	M	GC	Center	from center

Table 3-3 (Continued)
Coeur d'Alene Lake Field Data Summary - Kokanee

Sample Number	Collection Date	Collection Method	Process Date	Species	Fish Number	Length (cm)	Whole Wt.(g)	Process Wt.(g)	Sex	Sample Type	Collection Location	Comments
02334014	08/13/02	Hook/Line	08/14/02	Kokanee	1	28.1	231.9	66.4	M	FL	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	2	27	198.6	65.5	M	FL	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	3	31.6	321.7	66.5	M	FL	Center	
02334015	08/13/02	Hook/Line	08/14/02	Kokanee	1	29.3	261.5	47.9	M	FL	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	2	28	236.7	48.5	M	FL	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	3	32.5	271	48.6	M	FL	Center	
02334016	08/13/02	Hook/Line	08/14/02	Kokanee	1	27.9	205	44.4	M	FL	North	
	08/13/02	Hook/Line	08/14/02	Kokanee	2	27.6	211.4	44.8	M	FL	North	
	08/13/02	Hook/Line	08/14/02	Kokanee	3	25	177.8	45.4	M	FL	North	
02334017	08/13/02	Hook/Line	08/14/02	Kokanee	1	21	92.8	23.9	M	FL	North	
	08/13/02	Hook/Line	08/14/02	Kokanee	2	24.1	132.8	24.1	M	FL	North	
	08/13/02	Hook/Line	08/14/02	Kokanee	3	25.9	169.6	24.1	M	FL	North	
02334018	08/13/02	Hook/Line	08/14/02	Kokanee	1	20.1	85.2	27.6	M	FL	North	
	08/13/02	Hook/Line	08/14/02	Kokanee	2	24.6	138.6	27.7	F	FL	North	
	08/13/02	Hook/Line	08/14/02	Kokanee	3	27.9	219.6	28.2	M	FL	North	
02334019	08/13/02	Hook/Line	08/14/02	Kokanee	1	26.5	200.4	171.6	F	GC	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	2	27.3	210.1	180.8	M	GC	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	3	25.1	173.8	154.7	M	GC	Center	
02334020	08/13/02	Hook/Line	08/14/02	Kokanee	1	26.4	183.2	161	M	GC	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	2	20	88.9	76.6	M	GC	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	3	20.5	85.2	73.3	M	GC	Center	
02334021	08/13/02	Hook/Line	08/12/02	Kokanee	1	27.4	226.1	199.9	M	GC	North	Dup of 02334002
	08/13/02	Hook/Line	08/12/02	Kokanee	2	28.3	212.9	192.3	M	GC	North	
	08/13/02	Hook/Line	08/12/02	Kokanee	3	28.5	234.2	211	M	GC	North	
02334022	08/13/02	Hook/Line	08/14/02	Kokanee	1	28.1	231.9	66.4	M	FL	Center	Dup of 02334014
	08/13/02	Hook/Line	08/14/02	Kokanee	2	27	198.6	65.5	M	FL	Center	
	08/13/02	Hook/Line	08/14/02	Kokanee	3	31.6	321.7	66.5	M	FL	Center	

Notes:
 cm - centimeters
 Dup - duplicate
 F - female
 FL - fillet
 g - grams
 GC - gutted carcass
 M - male
 U - undetermined

Table 3-4
Coeur d'Alene Lake Analytical Results - Bass

Sample	Collection	Sample	Percent Lipid		Moisture	Arsenic		Cadmium		Lead		Mercury		Zinc	
Type	Location	Number	(%)	Q	(%)	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q
GC	Center	02194049	0.50%	U	76.4	0.08		0.012	U	0.035		0.158		11.4	
GC	Center	02194050	0.40%	U	74.7	0.134		0.013	U	0.268		0.229		13.7	
GC	Center	02194060 *	0.50%	U	77.15	0.123		0.006	U	0.104		0.187		13.1	
GC	Center	02194061	1.00%		75.3	0.146		0.012	U	0.111		0.108		14.7	
GC	Center	02194062	0.50%	U	74.9	0.108		0.012	U	0.306		0.119		13.1	
GC	Center	02194063	0.90%		74.9	0.211		0.017		0.276		0.131		14.4	
GC	Center	02194082	1.00%		75.2	0.062	U	0.014		0.114		0.341		11.1	
GC	Center	02194083	0.60%	U	75.7	0.08		0.012	U	0.234		0.18		8.82	
GC	Center	02194084	0.50%	U	74.5	0.13		0.013	U	0.334		0.132		10.6	
GC	Center	02194085	0.50%	U	77.6	0.105		0.011	U	0.183		0.126		11.9	
GC	North	02194000 *	0.90%		72.95	0.034	U	0.007	U	0.045		0.122		12.7	
GC	North	02194001	0.50%	U	76.3	0.078		0.019		0.221		0.0935		15.5	
GC	North	02194024	0.70%	U	76.7	0.093		0.015		0.042		0.129		13.0	
GC	North	02194025	0.70%	U	77	0.209		0.044		0.055		0.357		20.8	
GC	North	02194026	0.50%	U	78.1	0.215		0.02		0.135		0.118		17.7	
GC	North	02194027	0.60%	U	75.7	0.148		0.029		0.467		0.325		24.2	
GC	North	02194028	0.70%	U	75.8	0.085		0.022		0.159		0.105		16.2	
GC	North	02194029 *	0.70%	U	74.4	0.083		0.006	U	0.01		0.0753		13.9	
GC	North	02194030	0.60%	U	76.2	0.155		0.023		0.324		0.233		22.1	
GC	North	02194031	0.60%	U	77.1	0.179		0.03		0.105		0.179		17.7	
GC	South	02194004	0.70%	U	76.2	0.102		0.012	U	0.012	U	0.100		19.3	
GC	South	02194034	1.00%		76.2	0.162		0.012	U	0.012	U	0.108		10.8	
GC	South	02194035	NA		75.6	0.095		0.013		0.046		0.17		12.5	
GC	South	02194036	0.40%	U	75.6	0.129		0.012	U	0.054		0.114		10.7	
GC	South	02194065	0.80%		76.5	0.235		0.017		0.047		0.112		11.0	
GC	South	02194068 *	0.50%	U	73.8	0.113		0.067		0.011		0.121		13.5	
GC	South	02194069	0.40%	U	74.8	0.164		0.012	U	0.012	U	0.0986		11.8	
GC	South	02194072	0.80%		74	0.073		0.012	U	0.012	U	0.136		17.5	
GC	South	02194073	0.80%		74.6	0.218		0.013	U	0.013	U	0.0635		11.5	
GC	South	02194074	0.60%	U	74	0.164		0.018		0.153		0.0915		16.7	
FL	Center	02194064 *	0.50%	U	79.15	0.115		0.005	U	0.017		0.194		5.74	
FL	Center	02194079	0.50%	U	80.8	0.108		0.108		0.027		0.176		4.84	
FL	Center	02194080	0.40%	U	80.1	0.05	U	0.01	U	0.019		0.153		4.48	
FL	Center	02194081	0.50%	U	80.8	0.048	U	0.009	U	0.009	U	0.144		3.30	
FL	Center	02194086	0.40%	U	79.8	0.057		0.01	U	0.019		0.149		5.52	

Table 3-4 (Continued)
Coeur d'Alene Lake Analytical Results - Bass

Sample	Collection	Sample	Percent Lipid		Moisture	Arsenic		Cadmium		Lead		Mercury		Zinc	
Type	Location	Number	(%)	Q	(%)	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q
FL	Center	02194087	0.50%	U	79.6	0.059		0.01	U	0.012		0.386		4.69	
FL	Center	02194088	0.40%	U	80.1	0.056		0.01	U	0.024		0.275		5.06	
FL	Center	02194089	0.40%	U	80.2	0.069		0.01	U	0.01	U	0.139		4.73	
FL	Center	02194090	0.40%	U	79.5	0.1		0.01	U	0.023		0.121		5.68	
FL	Center	02194091	0.40%	U	79.7	0.051	U	0.011	U	0.047		0.139		4.67	

Notes:

CAS - Chemical Abstract Service

FL - fillet

g - gram

GC - gutted carcass

mg/kg - milligram per kilogram

% - percent

Q - validation qualifier

U - not detected

NA - not analyzed

* - field duplicate pair, average concentrations

Table 3-5
Coeur d'Alene Lake Analytical Results - Bullhead

Sample	Collection	Sample	Percent Lipid		Moisture	Arsenic		Cadmium		Lead		Mercury		Zinc	
Type	Location	Number	(%)	Q	(%)	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q
GC	Center	02194033 *	0.50%	U	76.2	0.046		0.009		0.146		0.0372		15.5	
GC	Center	02194051*	0.50%	U	79	0.51		0.115		4.76		0.0573		18.0	
GC	Center	02194052	0.50%	U	78.5	0.28		0.088		5.38		0.0752		22.4	
GC	Center	02194053	0.60%	U	77.4	0.249		0.07		4.27		0.0488		19.7	
GC	Center	02194054	0.50%	U	79.8	0.511		0.164		14.1		0.0529		36.0	
GC	Center	02194055	2.10%		79.3	0.068		0.112		2.55		0.0389		24.2	
GC	Center	02194056	0.40%	U	79.1	0.052	U	0.036		0.451		0.0246		15.5	
GC	Center	02194057	0.50%	U	77.4	0.063		0.027		0.07		0.0319		10.3	
GC	Center	02194058	0.50%	U	77.6	0.056	U	0.06		0.349		0.0406		16.2	
GC	Center	02194059	0.40%	U	80	0.4		0.09		6.4		0.0433		19.5	
GC	North	02194005	1.10%	J	76.5	0.089		0.035		1.26		0.0426		17.5	
GC	North	02194006	0.70%	U	77.5	0.056	U	0.038		1.15		0.0208		19.9	
GC	North	02194011	0.50%	U	78.3	0.095		0.028		1.03		0.0239		16.9	
GC	North	02194012	0.70%	U	78.2	0.072		0.028		0.822		0.0172		17.2	
GC	North	02194013	0.60%	U	77.8	0.058		0.027		2.31		0.0287		22.4	
GC	North	02194014	0.70%	U	77.9	0.077		0.049		0.782		0.0232		15.7	
GC	North	02194015	0.60%	U	77.6	0.063		0.027		0.544		0.0281		15.3	
GC	North	02194016	0.80%	U	77.5	0.086		0.034		2.10		0.0269		18.8	
GC	North	02194020 *	0.70%	U	77.95	0.048		0.02		0.517		0.0201		15.4	
GC	North	02194021	0.80%		77.6	0.099		0.056		3.70		0.0512		19.8	
GC	South	02194070 *	0.80%		75.85	0.051		0.018		0.226		0.0458		14.0	
GC	South	02194071 *	0.50%	U	78	0.068		0.013		0.103		0.0494		12.7	
GC	South	02194092	0.50%	U	77	0.058		0.011	U	0.347		0.0555		12.7	
GC	South	02194093	0.50%	U	76.7	0.058	U	0.017		1.24		0.0708		13.9	
GC	South	02194094	0.50%	U	78.8	0.11		0.051		1.35		0.0528		19.9	
GC	South	02194095	0.50%	U	79.7	0.051	U	0.01	U	0.19		0.0398		12.9	
GC	South	02194096	0.50%	U	77.6	0.056	U	0.056		0.576		0.0552		18.8	
GC	South	02194097	0.50%	U	76.3	0.059	U	0.012	U	0.047		0.0479		15.5	
GC	South	02194098	0.50%	U	77.2	0.078		0.018		0.668		0.0544		14.4	
GC	South	02194099	0.50%	U	78.7	0.051	U	0.01	U	0.038		0.046		13.4	
FL	Center	02194037	0.50%	U	81.8	0.046	U	0.02		0.033		0.0344		5.17	
FL	Center	02194038	0.60%	U	81.1	0.047	U	0.026		0.023		0.0474		4.80	
FL	Center	02194041	0.50%	U	81.9	0.045	U	0.034		0.01		0.0733		4.20	
FL	Center	02194042	0.60%	U	81.3	0.047	U	0.009	U	0.011		0.0488		4.92	
FL	Center	02194043	0.50%	U	80.7	0.05		0.013		0.025		0.0454		5.27	

Table 3-5 (Continued)
Coeur d'Alene Lake Analytical Results - Bullhead

Sample	Collection	Sample	Percent Lipid		Moisture	Arsenic		Cadmium		Lead		Mercury		Zinc	
Type	Location	Number	(%)	Q	(%)	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q	(mg/kg) wet	Q
FL	Center	02194044	0.50%	U	82	0.158		0.009	U	0.032		0.0411		4.97	
FL	Center	02194045	0.60%	U	80.6	0.109		0.027		0.475		0.0705		6.13	
FL	Center	02194046	0.40%	U	80.7	0.251		0.009	U	0.058		0.138		4.77	
FL	Center	02194047	0.50%	U	81.8	0.328		0.022		1.49		0.077		7.17	
FL	Center	02194048	NA		82.1	0.174		0.011	U	0.156		0.0698		5.51	
FL	North	02194002	0.70%	U	81.5	0.046	U	0.009	U	0.016		0.0358		4.79	
FL	North	02194003	0.60%	U	80.7	0.048	U	0.009	U	0.018		0.0344		6.22	
FL	North	02194007	0.60%	U	81.3	0.047	U	0.009	U	0.021		0.0493		5.31	
FL	North	02194008	0.50%	U	80.8	0.048	U	0.009	U	0.017		0.052		5.76	
FL	North	02194009	0.70%	U	80.5	0.049	U	0.012		0.076		0.0477		5.56	
FL	North	02194010	0.70%	U	80.4	0.049	U	0.01	U	0.024		0.0312		5.92	
FL	North	02194017	0.60%	U	80.8	0.048	U	0.01	U	0.023		0.0263		5.34	
FL	North	02194018	0.80%		80.6	0.049	U	0.01	U	0.033		0.046		6.07	
FL	North	02194019	0.80%	U	80.9	0.048	U	0.009	U	0.019		0.0282		5.16	
FL	North	02194022	0.70%	U	80.6	0.049	U	0.015		0.041		0.0344		5.04	
FL	South	02194100	0.40%	U	79.4	0.052	U	0.01	U	0.011		0.0721		5.34	
FL	South	02194101	0.40%	U	80.9	0.048	U	0.01	U	0.08		0.0652		4.91	
FL	South	02194102	0.60%	U	79.7	0.051	U	0.01	U	0.028		0.0682		5.10	
FL	South	02194103	0.50%	U	80.5	0.049	U	0.01	U	0.011		0.0677		4.90	
FL	South	02194104	0.70%	U	79.4	0.052	U	0.011	U	0.045		0.0526		5.25	
FL	South	02194105	0.60%	U	80.4	0.051		0.01	U	0.027		0.0643		5.19	
FL	South	02194106	0.60%	U	81	0.048	U	0.009	U	0.01		0.0649		4.52	
FL	South	02194107	0.60%	U	80.1	0.05	U	0.01	U	0.017		0.0567		5.09	
FL	South	02194108	0.70%	U	81	0.048	U	0.01	U	0.018		0.0591		5.05	
FL	South	02194109	0.60%	U	79.5	0.051	U	0.01	U	0.013		0.0608		4.98	

Notes:

CAS - Chemical Abstract Service

FL - fillet

g - gram

GC - gutted carcass

mg/kg - milligram per kilogram

% - percent

Q - validation qualifier

NA - not analyzed

U - not detected

* - field duplicate pair, average concentrations

Table 3-6
Coeur d'Alene Lake Analytical Results - Kokanee

Sample Type	Collection Location	Sample Number	Percent Lipid (%)	Q	Moisture (%)	Arsenic (mg/kg) wet	Q	Cadmium (mg/kg) wet	Q	Lead (mg/kg) wet	Q	Mercury (mg/kg) wet	Q	Zinc (mg/kg) wet	Q
FL	Center	02334005	1.10%		73.1	0.11		0.019		0.046		0.0834		6.73	
FL	Center	02334006	0.90%		73.4	0.09		0.019		0.014		0.0787		10.7	
FL	Center	02334007	0.60%	U	74.6	0.117		0.012	U	0.024		0.101		5.99	
FL	Center	02334009	0.70%	U	74.8	0.088		0.016		0.016		0.0962		6.17	
FL	Center	02334010	1.60%		72.9	0.084		0.014	U	0.014	U	0.0961		7.07	
FL	Center	02334014 *	0.80%		74.25	0.051		0.021		0.011		0.0939		6.43	
FL	Center	02334015	0.70%	U	73.8	0.079		0.024		0.018		0.104		6.79	
FL	North	02334016	1.40%		74.3	0.064		0.019		0.013		0.0811		5.63	
FL	North	02334017	1.50%		73.4	0.072		0.029		0.035		0.0938		7.26	
FL	North	02334018	0.70%	U	73.9	0.076		0.017		0.019		0.089		7.65	
GC	South	02334000	5.30%		70.7	0.179		0.12		0.179		0.0718		21.1	
GC	South	02334001	3.00%		68.9	0.156		0.164		0.146		0.074		17.3	
GC	North	02334002 *	2.60%		69.55	0.14		0.122		0.076		0.0734		17.9	
GC	North	02334003	5.30%		69.8	0.142		0.205		0.091		0.085		17.4	
GC	North	02334004	1.60%		69.6	0.14		0.112		0.073		0.0777		18.5	
GC	North	02334008	3.00%		67.7	0.194		0.142		0.12		0.0853		18.4	
GC	North	02334011	2.60%		69.7	0.133		0.17		0.061		0.0775		19.2	
GC	North	02334012	3.80%		70.8	0.169		0.137		0.128		0.0708		21.2	
GC	North	02334013	3.40%		71.1	0.116		0.118		0.104		0.067		23.6	
GC	Center	02334019	3.10%		69.9	0.123		0.123		0.2		0.0714		27.4	
GC	Center	02334020	2.40%		75.1	0.105		0.112		0.087		0.0731		17.7	

Notes:

CAS - Chemical Abstract Service

FL - fillet

g - gram

GC - gutted carcass

mg/kg - milligram per kilogram

% - percent

Q - validation qualifier

U - not detected

* - field duplicate pair, average concentrations

Table 3-7
Field Duplicate Sample Relative Percent Difference Comparison

Sample Type	Collection Location	Sample Number	Percent Lipid (%)	Moisture (%)	Arsenic (mg/kg) wet	Cadmium (mg/kg) wet	Lead (mg/kg) wet	Mercury (mg/kg) wet	Zinc (mg/kg) wet
BASS									
FL	Center	02194064	0.005	79.1	0.179	0.01	0.005	0.203	9.403
FL	Center	02194075	0.005	79.2	0.108	0.01	0.02	0.184	5.45
Duplicate pair average				79.15	0.1435	0.01	0.01125	0.1935	7.4265
Relative percent difference			0.00%	0.03%	12.37%	0.00%	30.00%	2.45%	13.31%
GC	South	02194068	0.005	73.3	0.112	0.013	0.016	0.116	14.178
GC	South	02194076	0.005	74.3	0.113	0.119	0.012	0.125	12.773
Duplicate pair average				73.8	0.1125	0.066	0.011	0.1205	13.4755
Relative percent difference			0.00%	0.34%	0.22%	40.15%	7.14%	1.87%	2.61%
GC	Center	02194060	0.005	77.4	0.111	0.011	0.102	0.217	12.227
GC	Center	02194066	0.004	76.9	0.136	0.011	0.106	0.157	13.929
Duplicate pair average				77.15	0.1235	0.011	0.104	0.187	13.078
Relative percent difference			5.56%	0.16%	5.06%	0.00%	0.96%	8.02%	3.25%
GC	North	02194029	0.007	74.8	0.071	0.012	0.014	0.0772	16.078
GC	North	02194032	0.009	74	0.096	0.013	0.013	0.0733	11.7
Duplicate pair average				74.4	0.0835	0.0125	0.01025	0.07525	13.889
Relative percent difference			6.25%	0.27%	7.49%	2.00%	1.85%	1.30%	7.88%
GC	North	02194000	0.009	73.6	0.055	0.013	0.034	0.126	12.962
GC	North	02194023	0.006	72.3	0.064	0.014	0.055	0.118	12.382
Duplicate pair average				72.95	0.0595	0.0135	0.0445	0.122	12.672
Relative percent difference			10.00%	0.45%	3.78%	1.85%	11.80%	1.64%	1.14%
BULLHEAD									
GC	Center	02194033	0.005	76.1	0.062	0.012	0.17	0.0373	15.439
GC	Center	02194039	0.004	76.3	0.031	0.013	0.122	0.037	15.5
Duplicate pair average				76.2	0.0465	0.0095	0.146	0.03715	15.4695
Relative percent difference			5.56%	0.07%	16.67%	2.00%	8.22%	0.20%	0.10%
GC	North	02194020	0.007	77.8	0.069	0.022	0.497	0.0204	15.629
GC	North	02194040	0.006	78.1	0.055	0.018	0.537	0.0197	15.177
Duplicate pair average				77.95	0.062	0.02	0.517	0.02005	15.403
Relative percent difference			3.85%	0.10%	5.65%	5.00%	1.93%	0.87%	0.73%
GC	Center	02194051	0.005	78.9	0.561	0.116	3.967	0.0562	16.796
GC	Center	02194067	0.005	79.1	0.46	0.113	5.539	0.0583	19.228
Duplicate pair average				79	0.5105	0.1145	4.753	0.05725	18.012
Relative percent difference			0.00%	0.06%	4.95%	0.66%	8.27%	0.92%	3.38%
GC	South	02194070	0.008	74.9	0.053	0.03	0.276	0.0459	13.328
GC	South	02194077	0.005	76.8	0.07	0.012	0.18	0.0456	14.523
Duplicate pair average				75.85	0.0615	0.018	0.228	0.04575	13.9255
Relative percent difference			11.54%	0.63%	6.91%	21.43%	10.53%	0.16%	2.15%
GC	South	02194071	0.005	78.2	0.072	0.014	0.085	0.0504	12.753
GC	South	02194078	0.005	77.8	0.064	0.012	0.12	0.0483	12.721
Duplicate pair average				78	0.068	0.013	0.1025	0.04935	12.737
Relative percent difference			0.00%	0.13%	2.94%	3.85%	8.54%	1.06%	0.06%
KOKANEE									
GC	North	02334002	0.026	69.5	0.174	0.125	0.052	0.0768	16.074
GC	North	02334021	0.041	69.6	0.106	0.119	0.1	0.07	19.699
Duplicate pair average				69.55	0.14	0.122	0.076	0.0734	17.8865
Relative percent difference			11.19%	0.04%	12.14%	1.23%	15.79%	2.32%	5.07%
FL	Center	02334014	0.008	74.2	0.057	0.021	0.013	0.0968	6.166
FL	Center	02334022	0.006	74.3	0.069	0.021	0.016	0.091	6.682
Duplicate pair average				74.25	0.063	0.021	0.01125	0.0939	6.424
Relative percent difference			7.14%	0.03%	4.76%	0.00%	5.17%	1.54%	2.01%
Average RPD for all duplicates			5.09%	0.19%	6.91%	6.51%	9.18%	1.86%	3.47%

Notes:

Q - data qualifiers
 mg/kg - milligram per kilogram
 % - percent
 U - not detected

4.0 DATA SUMMARY

This section provides preliminary summary statistics for the data. These summary statistics are provided for all fish collected in the lake for all species: bass, bullhead, and kokanee. For bass and bullhead species summary statistics are provided for separate sections of the lake (north, middle, south). The following tables provide the results of the summary and statistical evaluation:

The fish tissue wet weight analytical data presented in Section 3 were used to prepare these summary tables. For the purposes of summarizing the data results, several steps were taken to reduce the data. All non-detect concentrations were evaluated at half the detection limit value. Field duplicate sample results were averaged with the corresponding environmental sample.

The statistical calculations were calculated on the wet weight concentrations in the following manner:

- **Total Number of Samples** – Reflects a count of all data points associated with a specific sample type and analyte.
- **Number of Detects** - Reflects all analytical results that were not flagged with a qualifier of “U” or “UJ”. Value was calculated in the spreadsheet as the difference between the total number of samples minus nondetected values.
- **Number Nondetects** - Reflects a count of all individual results that were flagged with a qualifier of “U” or “UJ”.
- **Minimum Concentration** - Reflects the minimum concentration for the specific sample type and analyte. The value reflects the minimum reported value of all data, including detected concentrations or nondetected concentrations at the reporting limit (reported in mg/kg wet weight).
- **Maximum Concentration** - Reflects the maximum concentration for the specific combination of sample type and analyte. The value reflects the maximum reported value of all data, including detected concentrations or nondetected concentrations at the reporting limit (reported in mg/kg wet weight).
- **Median Concentration** - Reflects the median concentration for the specific combination of sample type and analyte. The value reflects the median concentration calculated using the individual detected concentrations and all

nondetected concentrations at half of the reporting limit (reported in mg/kg wet weight).

- **Mean Concentration** - Reflects the average concentration for the specific combination of sample type and analyte. The value reflects the average concentration calculated using the individual detected concentrations and all nondetected concentrations at half of the reporting limit (reported in mg/kg wet weight).
- **Standard Deviation of the Mean** - Reflects the standard deviation for the specific combination of sample type and analyte. The value, generated using Excel, was calculated using the individual detected concentrations and all nondetected concentrations at half of the reporting limit (this value is unitless).
- **Standard Error of the Mean** – The standard error of the mean was calculated for each sample type/analyte combination using the following equation (this value is unitless):

$$\frac{\sigma}{\sqrt{n}}$$

Where

σ = Standard deviation of the mean

n = number of analytical results

- **Coefficient of Variation of the Mean** - Reflects the coefficient of variation for the specific combination of sample type and analyte. The value was calculated using the following equation (this value is unitless):

Where

σ = Standard deviation of the mean

\bar{X} = Average concentration

- **Upper and Lower 95% Confidence Limit of the Mean** – Confidence limits were calculated using the following method equation (reported in mg/kg wet weight):

$$95\% \text{ UCL} = \bar{X} + \frac{\sigma}{\sqrt{n}} * TINV(\alpha, df)$$

Where

\bar{X} = Average concentration

σ = Standard deviation of the mean

n = number of analytical results

TINV = Excel function for calculating the critical value associated with a t-distribution

α = Probability

df = degrees of freedom (n-1)

The probability defined in the TINV function reflects a two-tail probability distribution as follows:

TINV(0.05,df)

Table 4-1
Coeur d'Alene Lake Fish Data Summary – Bass Gutted Carcass

Entire Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	30	30	30	30	30
Number of Detects	28	14	25	30	30
Number of Nondetects	2	16	5	0	0
Minimum Concentration (mg/kg wet)	0.034 U	0.006 U	0.01	0.0635	8.82
Maximum Concentration (mg/kg wet)	0.235	0.067	0.467	0.357	24.2
Median Concentration (mg/kg wet)	0.126	0.0065	0.105	0.124	13.3
Mean Concentration (mg/kg wet)	0.129	0.0146	0.129	0.152	14.4
Standard Deviation of the Mean	0.0552	0.0139	0.124	0.0755	3.72
Standard Error of the Mean	0.0101	0.00254	0.0226	0.0138	0.68
Coefficient of Variation of the Mean	0.428	0.954	0.959	0.496	0.259
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.149	0.0197	0.175	0.18	15.8
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.108	0.00936	0.0828	0.124	13
North Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	9	8	10	10	10
Number of Nondetects	1	2	0	0	0
Minimum Concentration (mg/kg wet)	0.034 U	0.006 U	0.01	0.0752	12.6
Maximum Concentration (mg/kg wet)	0.215	0.044	0.467	0.357	24.2
Median Concentration (mg/kg wet)	0.121	0.021	0.12	0.126	17
Mean Concentration (mg/kg wet)	0.126	0.0209	0.156	0.174	17.4
Standard Deviation of the Mean	0.0648	0.0122	0.145	0.0992	3.92
Standard Error of the Mean	0.0205	0.00387	0.0458	0.0314	1.24
Coefficient of Variation of the Mean	0.513	0.587	0.927	0.571	0.226
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.173	0.0296	0.26	0.245	20.2
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0799	0.0121	0.0526	0.103	14.6
Center Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	9	2	10	10	10
Number of Nondetects	1	8	0	0	0
Minimum Concentration (mg/kg wet)	0.062 U	0.006 U	0.035	0.108	8.82
Maximum Concentration (mg/kg wet)	0.211	0.017	0.334	0.341	14.6
Median Concentration (mg/kg wet)	0.116	0.006	0.209	0.145	12.5
Mean Concentration (mg/kg wet)	0.115	0.00765	0.197	0.171	12.3
Standard Deviation of the Mean	0.0477	0.00431	0.101	0.0704	1.85
Standard Error of the Mean	0.0151	0.00136	0.0321	0.0223	0.585

Table 4-1 (Continued)
Coeur d'Alene Lake Fish Data Summary – Bass Guttled Carcass

Center Coeur d'Alene Lake (continued)	Arsenic	Cadmium	Lead	Mercury	Zinc
Coefficient of Variation of the Mean	0.416	0.564	0.516	0.411	0.151
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.149	0.0107	0.269	0.221	13.6
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0807	0.00456	0.124	0.121	10.9
South Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	10	4	5	10	10
Number of Nondetects	0	6	5	0	0
Minimum Concentration (mg/kg wet)	0.073	0.012 U	0.011	0.0635	10.7
Maximum Concentration (mg/kg wet)	0.235	0.067	0.153	0.17	19.3
Median Concentration (mg/kg wet)	0.146	0.00625	0.00875	0.11	12.1
Mean Concentration (mg/kg wet)	0.146	0.0152	0.0342	0.111	13.5
Standard Deviation of the Mean	0.053	0.0189	0.0463	0.0281	3.17
Standard Error of the Mean	0.0167	0.00596	0.0146	0.0089	1
Coefficient of Variation of the Mean	0.364	1.24	1.36	0.253	0.234
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.183	0.0286	0.0673	0.132	15.8
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.108	0.00167	0.00103	0.0913	11.2

U - not detected

Table 4-2
Coeur d'Alene Lake Fish Data Summary – Bass Fillets

Entire Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	7	1	8	10	10
Number of Nondetects	3	9	2	0	0
Minimum Concentration (mg/kg wet)	0.048 U	0.005 U	0.009 U	0.121	3.30
Maximum Concentration (mg/kg wet)	0.115	0.108	0.047	0.386	5.74
Median Concentration (mg/kg wet)	0.058	0.005	0.019	0.151	4.79
Mean Concentration (mg/kg wet)	0.0639	0.0151	0.0198	0.188	4.87
Standard Deviation of the Mean	0.0343	0.0327	0.0122	0.0823	0.713
Standard Error of the Mean	0.0109	0.0103	0.00386	0.026	0.225
Coefficient of Variation of the Mean	0.537	2.17	0.618	0.439	0.146
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.0884	0.0384	0.0285	0.246	5.38
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0393	-0.0083	0.011	0.129	4.36

U - not detected

Table 4-3
Coeur d'Alene Lake Fish Data Summary – Bullhead Guttred Carcass

Entire Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	30	30	30	30	30
Number of Detects	22	26	30	30	30
Number of Nondetects	8	4	0	0	0
Minimum Concentration (mg/kg wet)	0.046 U	0.009	0.038	0.0172	10.3
Maximum Concentration (mg/kg wet)	0.511	0.164	14.12	0.0752	35.956
Median Concentration (mg/kg wet)	0.0655	0.031	0.802	0.043	16.5
Mean Concentration (mg/kg wet)	0.113	0.0436	1.92	0.0417	17.5
Standard Deviation of the Mean	0.136	0.038	2.88	0.0149	4.77
Standard Error of the Mean	0.0248	0.00694	0.526	0.00272	0.87
Coefficient of Variation of the Mean	1.2	0.872	1.5	0.357	0.273
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.164	0.0578	2.99	0.0473	19.3
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0625	0.0294	0.841	0.0361	15.7
North Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	9	10	10	10	10
Number of Nondetects	1	0	0	0	0
Minimum Concentration (mg/kg wet)	0.048	0.02	0.517	0.0172	15.299
Maximum Concentration (mg/kg wet)	0.099	0.056	3.696	0.0512	22.422
Median Concentration (mg/kg wet)	0.0745	0.031	1.09	0.0254	17.4
Mean Concentration (mg/kg wet)	0.0715	0.0342	1.42	0.0283	17.9
Standard Deviation of the Mean	0.0225	0.011	1	0.0107	2.31
Standard Error of the Mean	0.00711	0.00348	0.317	0.00337	0.73
Coefficient of Variation of the Mean	0.315	0.322	0.705	0.377	0.129
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.0876	0.0421	2.14	0.0359	19.5
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0554	0.0263	0.705	0.0206	16.2
Center Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	8	10	10	10	10
Number of Nondetects	2	0	0	0	0
Minimum Concentration (mg/kg wet)	0.046	0.009	0.07	0.0246	10.328
Maximum Concentration (mg/kg wet)	0.511	0.164	14.12	0.0752	35.956
Median Concentration (mg/kg wet)	0.159	0.079	3.41	0.042	18.8
Mean Concentration (mg/kg wet)	0.218	0.0771	3.85	0.0451	19.7
Standard Deviation of the Mean	0.199	0.0468	4.33	0.0143	6.92
Standard Error of the Mean	0.0631	0.0148	1.37	0.00453	2.19

Table 4-3 (Continued)
Coeur d'Alene Lake Fish Data Summary – Bullhead Guttred Carcass

Center Coeur d'Alene Lake (continued)	Arsenic	Cadmium	Lead	Mercury	Zinc
Coefficient of Variation of the Mean	0.915	0.606	1.13	0.318	0.351
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.361	0.111	6.95	0.0553	24.7
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0754	0.0437	0.75	0.0348	14.8
South Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	5	6	10	10	10
Number of Nondetects	5	4	0	0	0
Minimum Concentration (mg/kg wet)	0.051 U	0.01 U	0.038	0.0398	12.7
Maximum Concentration (mg/kg wet)	0.11	0.056	1.353	0.0708	19.9
Median Concentration (mg/kg wet)	0.0403	0.015	0.287	0.0511	13.9
Mean Concentration (mg/kg wet)	0.0503	0.0195	0.479	0.0518	14.8
Standard Deviation of the Mean	0.0285	0.0188	0.48	0.00836	2.54
Standard Error of the Mean	0.00902	0.00594	0.152	0.00264	0.803
Coefficient of Variation of the Mean	0.567	0.966	1	0.162	0.171
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.0706	0.0329	0.822	0.0577	16.6
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0299	0.00601	0.135	0.0458	13

U - not detected

Table 4-4
Coeur d'Alene Lake Fish Data Summary – Bullhead Fillets

Entire Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	30	30	30	30	30
Number of Detects	7	8	30	30	30
Number of Nondetects	23	22	0	0	0
Minimum Concentration (mg/kg wet)	0.045 U	0.009 U	0.01	0.0263	4.199
Maximum Concentration (mg/kg wet)	0.328	0.034	1.494	0.138	7.171
Median Concentration (mg/kg wet)	0.0245	0.005	0.0235	0.0523	5.16
Mean Concentration (mg/kg wet)	0.056	0.00918	0.0955	0.0554	5.28
Standard Deviation of the Mean	0.0748	0.00824	0.278	0.0215	0.583
Standard Error of the Mean	0.0137	0.00151	0.0507	0.00393	0.106
Coefficient of Variation of the Mean	1.34	0.898	2.91	0.389	0.11
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.0839	0.0123	0.199	0.0635	5.5
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.028	0.00611	-0.0082	0.0474	5.06
North Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	0	2	10	10	10
Number of Nondetects	10	8	0	0	0
Minimum Concentration (mg/kg wet)	0.046 U	0.009 U	0.016	0.0263	4.792
Maximum Concentration (mg/kg wet)	0.049 U	0.015	0.076	0.052	6.215
Median Concentration (mg/kg wet)	0.024	0.00475	0.022	0.0351	5.45
Mean Concentration (mg/kg wet)	0.0241	0.00645	0.0288	0.0385	5.52
Standard Deviation of the Mean	0.000497	0.00379	0.0183	0.00936	0.468
Standard Error of the Mean	0.000157	0.0012	0.0058	0.00296	0.148
Coefficient of Variation of the Mean	0.0207	0.587	0.637	0.243	0.0848
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.0244	0.00916	0.0419	0.0452	5.85
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0237	0.00374	0.0157	0.0318	5.18
Center Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	6	6	10	10	10
Number of Nondetects	4	4	0	0	0
Minimum Concentration (mg/kg wet)	0.045 U	0.009 U	0.01	0.0344	4.199
Maximum Concentration (mg/kg wet)	0.328	0.034	1.494	0.138	7.171
Median Concentration (mg/kg wet)	0.0795	0.0165	0.0325	0.0593	5.07
Mean Concentration (mg/kg wet)	0.116	0.0161	0.232	0.0646	5.29
Standard Deviation of the Mean	0.109	0.0111	0.466	0.0299	0.834
Standard Error of the Mean	0.0345	0.00352	0.147	0.00946	0.264

Table 4-4 (Continued)
Coeur d'Alene Lake Fish Data Summary – Bullhead Fillets

Center Coeur d'Alene Lake (continued)	Arsenic	Cadmium	Lead	Mercury	Zinc
Coefficient of Variation of the Mean	0.939	0.691	2.01	0.463	0.158
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.194	0.0241	0.565	0.086	5.89
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0382	0.00815	-0.1	0.0432	4.69
South Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	1	0	10	10	10
Number of Nondetects	9	10	0	0	0
Minimum Concentration (mg/kg wet)	0.048 U	0.009 U	0.01	0.0526	4.522
Maximum Concentration (mg/kg wet)	0.052	0.011	0.08	0.0721	5.335
Median Concentration (mg/kg wet)	0.0253	0.005	0.0175	0.0646	5.07
Mean Concentration (mg/kg wet)	0.0276	0.005	0.026	0.0632	5.03
Standard Deviation of the Mean	0.00828	0.000236	0.0219	0.00587	0.229
Standard Error of the Mean	0.00262	0.0000745	0.00691	0.00186	0.0724
Coefficient of Variation of the Mean	0.3	0.0471	0.841	0.0929	0.0455
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.0335	0.00517	0.0416	0.0674	5.2
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0216	0.00483	0.0104	0.059	4.87

U - not detected

Table 4-5
Coeur d'Alene Lake Fish Data Summary – Kokanee Gutted Carcass

Entire Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	11	11	11	11	11
Number of Detects	11	11	11	11	11
Number of Nondetects	0	0	0	0	0
Minimum Concentration (mg/kg wet)	0.105	0.112	0.061	0.067	17.292
Maximum Concentration (mg/kg wet)	0.194	0.205	0.2	0.0853	27.361
Median Concentration (mg/kg wet)	0.14	0.123	0.104	0.0734	18.5
Mean Concentration (mg/kg wet)	0.145	0.139	0.115	0.0752	20
Standard Deviation of the Mean	0.0272	0.0296	0.0449	0.00576	3.15
Standard Error of the Mean	0.00819	0.00892	0.0135	0.00174	0.949
Coefficient of Variation of the Mean	0.187	0.213	0.39	0.0766	0.158
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.163	0.159	0.145	0.079	22.1
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.127	0.119	0.0848	0.0713	17.8

Table 4-6
Coeur d'Alene Lake Fish Data Summary – Kokanee Fillets

Entire Coeur d'Alene Lake	Arsenic	Cadmium	Lead	Mercury	Zinc
Total Number of Samples	10	10	10	10	10
Number of Detects	10	8	9	10	10
Number of Nondetects	0	2	1	0	0
Minimum Concentration (mg/kg wet)	0.051	0.012 U	0.011	0.0787	5.628
Maximum Concentration (mg/kg wet)	0.117	0.029	0.046	0.104	10.746
Median Concentration (mg/kg wet)	0.0815	0.019	0.017	0.0939	6.76
Mean Concentration (mg/kg wet)	0.0831	0.0177	0.0203	0.0917	7.05
Standard Deviation of the Mean	0.0198	0.00698	0.0119	0.00846	1.43
Standard Error of the Mean	0.00626	0.00221	0.00376	0.00268	0.454
Coefficient of Variation of the Mean	0.238	0.394	0.586	0.0922	0.204
Upper 95% Confidence Limit of the Mean (mg/kg wet)	0.0973	0.0227	0.0288	0.0978	8.07
Lower 95% Confidence Limit of the Mean (mg/kg wet)	0.0689	0.0127	0.0118	0.0857	6.02

U - not detected

5.0 REFERENCES

- CH2M HILL and URS Greiner. 2001. *Final Ecological Risk Assessment for the Coeur d'Alene RI/FS*. May 2001.
- Coeur d'Alene Tribe. 2001. *Preliminary Study Plan Proposal: Coeur d'Alene Lake Fish Sampling for Trace Metals*. October 2001. 5 pp.
- TerraGraphics. 2001. *Final Human Health Risk Assessment for the Coeur d'Alene Basin Extending From Harrison to Mullan on the Coeur d'Alene River and Tributaries*. June 2001.
- URS Greiner and CH2M HILL. 2001a. *Final Remedial Investigation Report, Coeur d'Alene Basin*. October 2001.
- . 2001b. *Final Feasibility Study Report, Coeur d'Alene Basin*. October 2001.
- U.S. Environmental Protection Agency (USEPA). 2002a. *Fish Investigation Plan, Coeur d'Alene Basin*. April 2002.
- . 2002b. *Record of Decision, Coeur d'Alene Basin*. September 2002.
- . 2002c. *Update on Coeur d'Alene Lake Fish Sampling - Phase 2 Kokanee*. Email correspondence from Anne Dailey, USEPA, to representatives of the Coeur d'Alene Tribe, USGS, USEPA, ATSDR, IDEQ, IDFG, Ecology, USFWS, IDHW, and Spokane Tribe. August 15, 2002.
- . 2001. *Proposed Plan, Coeur d'Alene Basin*. October 2001.
- . 2000. *Guidance for Assessing Chemical Contamination Data for Use in Fish Advisories. Volume 1, Fish Sampling and Analysis*. 3rd Ed. EPA 823-B-00-007. Office of Water, Washington D.C.
- . 1994. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. EPA/540/R-94/013. February 1994.
- U.S. Fish and Wildlife Service (USFWS). 2003. *Recovery Subpermit to Take the Bull trout (Salvelinus confluentus), Subpermit No. FWSUCR-1 and Subpermit No. FWSUCR-2*.

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APPENDIX A

Laboratory Analytical Results

APPENDIX A LABORATORY ANALYTICAL RESULTS

The following appendix provides summary tables of the laboratory analytical results. Table A-1 summarizes the analytical results as reported by the laboratory. Fish tissue data are reported by the laboratory in dry-weight concentrations. Only mercury is reported as a wet-weight concentration. Table A-2 provides a summary of all the analytical results in wet-weight concentrations. Dry-weight concentrations are converted to wet weight by multiplying the dry-weight concentration by the percent solids (1- percent moisture). The equipment rinsate analytical results are reported in Table A-3. Data validation reports follow the summary tables. The laboratory analytical reports follow the data validation reports.